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ORIGINAL ARTICLES

WHAT IS THE PRINCIPLE INVOLVED IN THE TREATMENT OF OPERATIVE WOUNDS—IS IT BIOPLASTIC AND CELLULAR, OR IS IT BACTERIOLOGIC?

SANITARY SCIENCE AND SURGERY FOR THE TWENTIETH CENTURY.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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Have we any definite pathology, and if so, is it bioplastic and cellular or not? Dr. Hughes has told us in his paper, "it takes something more than a germ to excite disease." The President, Dr. Hibberd, said in his address: "The progress in medicine in the immediate future, must be along biologic lines, following the lead of Virchow, Beale, Ferrier, Pasteur, Kock, Sternberg and many others." I desire to accentuate this thought, and render more impressive what they have said.

Surgical pathology should be comprehended in the genesis of cells. Transition and relation to the tissue should not be forgotten. That surgical pathology is based upon a careful study of pathogenesis, is the line of progress which has been most successful in developing the rich stores of knowledge in the past, and must continue to do so in the future of conservative surgery. Have we forgotten the discussion of the histologic questions of bioplasm, cellular elements and tissue formation? Have we left behind us the doctrines biologic, views which were in some sense the foundation of the pathologic views of Rokitansky, McCartney, Paget and Virchow? Do we believe that there is such a thing as a generation of living cells from protoplasm or bioplasm, and that degeneration, failure and death of cells and tissues may have origin in causes remote from the influence or presence of bacteria? Do we now comprehend the laws of life force, so that we say all disease springs from their presence? Is it not true that cellular elements are born, live and die as men do, new ones taking their place? If so, do not the laws of life so indicate by succession?

This began to be more fully understood when surgeons began to comprehend the processes of inflammation, and resort to means for immediate union of cut surfaces. I will not go over this beginning of the doctrine involved in such processes. Let us remember, however, the old maxim: "That art is long, experience deceptive and judgment difficult." While we do this, let us gather up the experience of the past and present, so that we may look into the future with an increasing confidence in our art, and a growing reliance upon better and improving methods. Let us test as well as gather up the facts of results as they come to us in the methods of surgery to-day. There are many factors which enter into this question and a rigid and just analysis of all of them will the better enable us to judge, no matter how intimately and variously may be blended the known and the unknown. Every clinical history carefully recorded is experience made alive and known, and presents to every reader the *dramatis personæ* all absorbing in interest to life and person. It is the great centralization of fact in experience, viz., *the truth*.

We go back to primeval history and with historic certainty record the history and progress of our art through the ages and with contented serenity regard the wonderful discoveries of our own age. We have arrived at the top of some table land, peak or mountain top of observation, from which we look out upon the march of time and progress, observing the advance and recession of the waves of opinion. Stretching away in front we scan the outlying surface of the progress of the future, take in the mountain ranges of difficulty passed and in prospect, and wonder what mountains of difficulty and labor shall loom up before us in the future.

Like Bonaparte, whose ambition took the world for conquest and whose genius was equal to almost all emergencies (save the field of Waterloo), when his army came to the Alps in mid-winter he said to one of his generals: "Is the ascent possible?" He was answered: "Barely possible." Said he in reply: "Let the ascent begin." In this spirit we go forward in actual achievement, in almost herculean labor amid defeat, disappointment and death, yet with evident progress and *esprit du corps;* and this spirit in Europe, Germany and France speaks to America, and America back to these and other nations; while a trans-Atlantic writer having caught the spirit of the age writes this sentiment, viz.: "The medicine of the twentieth century—sanitary science and surgery." It may be surgery with Listerism, but at any rate it will be sanitary science and preventive surgery. I mean less operation and more prevention. Whatever it may be, in the advance of our science and art, it has certainly been demonstrated that cleanliness and surgery is next to godliness in life, and we accept the inevitable and call it progress. Invested with the interest which the discussions, pro and con of the past and present, have given to us, there is no subject which can occupy our minds more profitably.

In fact, from the early history of medicine to the present, no one subject has been of more value than the one we desire briefly to present in the treatment of surgical wounds. The methods have always differed, but perhaps less widely now than ever before. One of the first things to be understood is this, viz.: That there is a vast difference between a sub-cutaneous wound and an open one. In what does this difference consist is a very important question to settle. Hence that method which gives results most nearly

like those following subcutaneous injury, and this means when reduced to its simplest terms (as in algebraic formula) that method best adapted to secure primary or immediate union. Let us stop here a moment to learn what led to this view which is now accepted by the adherents of Listerism. Thanks to the revelations of the microscope, including the investigations of Pasteur, Koch and others, the present generation of medical men were taught that fermentation and decomposition are due to myriads of organisms, and these are found everywhere pervading the air and water and are rapidly multiplied under conditions of heat and moisture, especially in albuminous and nitrogenous compounds. Pasteur also showed that fluids had undergone no change when such germs were excluded and could be so excluded by filtering the air in which they were exposed through layers of loose cotton fiber. What remarkable relation this bears to wound treatment, not known or understood at the time, but applied by the revelations of the microscope becomes applied science on the basis of deduction.

In an article in the London *Lancet*, Vol. 2, page 553, by Jos. Lister, in 1867, "On the Antiseptic Principle in Surgery," Mr. Gamgee says: "On none of my visits to the Hotel Dieu, in former years, had I seen wounds look so well, and there could be no doubt that the old antiseptic practice, with a comparatively new agent had been generalized by Maisonneuve with manifest advantage, in resisting the pernicious influences of an unhealthy hospital." He says further: "The sensational circumstances under which the antiseptic system was revived in London, excited an amount of interest which detracted professional attention from great surgical principles, viz.: Rest, position, pressure and exclusion of air in healthy houses or hospitals are conducive to the healing of the majority of wounds. Pyemia, erysipelas, sloughing phagedena, and their allies are directly produced by unhealthy surroundings in hospitals. In prevention of these, antiseptic agents are of great value, but it must be borne in mind, that their use is not necessary in surgery out of unhealthy hospitals and in the absence of other unhealthy conditions." Van Sweiten advised antiseptic applications in very bad compound fractures quoted in Percival Pott, (op. cit.) Vol. 1, page 451. Burgreave, "Le Genie de la Chirurgie," 1853, page 42, advises "the application of hydrochloric acid and honey as a topical preventive of purulent absorption and hospital gangrene."

Sedillot, "Infection Purulente et Pyemia," Paris, 1849, page 503, recommended the application to suppurating surfaces of aromatic wine, and decoction of bark, with or without the addition of sul. acid, sul. copper, or cor. sub." Boyer "advised the use of the chlorids to counteract the putridity of the blood." Gerdy, (Chirurgie Pract.) Paris, 1853, Vol. iv, page 146, urged that "the treatment of suppurations required amongst other means, disinfectants;" and surgical literature abounds in records to prove that the same principles have been carried out by a variety of means, among which are mentioned "benzoin or benzoic acid, clay, pitch, tar and chloralum. Hence a larger experience since has not yet fully convinced many eminent surgeons of the necessity at all times and places of the use of antiseptics.

"The fact is now, and has been clear that the disturbing influence of the carbolic acid controversy, as the disinfectant *par excellence* has been especially marked in the treatment of wounds not made by the surgeon, viz., compound fractures; and in these carbolic oil, putty, gauze and spray have served to detract attention from the essentials, viz., air exclusion, rest, position, pressure. Fundamental principles have been lost sight of, while theories have had an ephemeral repute." While this has been true in some senses, and while Lister stands to this question in very much the same attitude as Sir J. Y. Simpson stood in relation to that of anesthetics, let us gather up the present facts and status of the question and see if it be a real progress or is it only seeming progress. We should also remember the history of the question so far as Lister's name is connected with it. It was in the old Edinburgh infirmary, where was ignored all notions of hygiene and healthy surroundings, when Lister began his experimental use of the treatment of wounds by carbolic spray, dressings of gauze, carbolic oil, etc. Since then, having risen into some notoriety he was called from the University of Edinburgh to London to teach surgery in the metropolis of Europe. Yet with his position and commanding influence he has not been able to enforce upon the professional mind the entire acceptance of his teachings. It is well it is so. Governed by traditions of experience and the dogmatism and conservatism which has been the result of our educational systems, the profession in both hemispheres has ever been slow to adopt new methods and new doctrines, and have usually applied with rigorous severity the reason and the facts. The history of surgery for the last decade in all the world shows better results, owing to something. The question is, What is that something? When in cases of fever we observe the temperature and pulse we now know that these are correlated to something, and we now know what that something is. We see the patient emaciating, wasting every day, and the problem is solved in the estimation of the excreta of the body by a quantitative analysis. So we now bring all questions to the *experimentum crucis* before accepting as proved any doctrine or theory. The opponents of antiseptic methods, of whom there are many, claim that the improvement is due to greater care, sanitary regulations, better dressing of wounds, the better comprehension of the nature of inflammation, the better comprehension of the vital *forces* in *each case* rather than to any *special local dressing*, including special antiseptic methods. One thing here, however, must now be conceded, viz.: That the dangers to be overcome in the treatment of wounds lies in those special reasons or conditions which cause a failure of primary union, and that these conditions are due in great measure to the changes, septic or otherwise, which take place in the wound, and these are believed now to be, if not absolutely proved to be, the presence of living germs. Here I am trenching upon the actual groundwork of the whole question, and for the sake of the presentation of the history of the question by observation drawn from the experience of men all over the world, we will admit that germs exist and through air and water and clothing and dressings come into contact with wounds.

All surgeons are acquainted by observation with the rapidity and safety of repair secured in the proper dressing of a simple fracture, and equally well with the dangers to limb and life in compound fractures. What constitutes the difference? It is not now believed to be in the greater severity of the lesion in

the latter above the former, but owing to some element introduced which produces a wide difference, and these are believed to be living germs which occasion septic inflammation and suppurative history. This engenders a poison which affects the entire organism. Pyemic conditions are induced, blood contaminated and poisoned and thus the danger is not so much from the nature of the wound as from the conditions which grow out of it. The demonstration is, I suppose, quite generally accepted that a large number of acute and specific forms of disease are dependent upon the development of various kinds of germs which may be specific to the form of disease produced, and modified by peculiar or special circumstances so as to give definite results.

Recent developments in the investigation of the special influence which seems to be exerted in the causation of disease shows a much more widely diffused agency by germs in the production of disease than had previously been supposed, and now the investigators are asserting that germs exist, only to be positively denied by others who are entitled to equal acceptance. The wide dissemination and existence of pathogenic bacteria at least gives an easy and more satisfactory explanation to rapidly spreading contagious and infectious disease, and that subtle factor which has been so much needed to explain the facts of contagion and infection is believed to be found in the doctrine of germs. "Pasteur's experiments, in which he cultivated the germs, show that certain forms of bacteria which were rapidly destructive and deadly may be so modified as to lose a large amount of virulence though reproduced in a similar manner, and this modification of power is shown to be only in a change of temperature to which they are subjected." The converse may also be true, and ordinarily bacteria which might develop serious difficulties in disease may be rendered harmless, or permitted by circumstances to be fearfully destructive of human life. Apply this thought to cholera and diphtheria, which are now classified in "Ziemssen's Encyclopœdia of Practice" as germ diseases. Everybody knows the dangers accruing from the unhealthy wards of long used hospitals to the unfortunate sick or wounded, yet while this is so and while hygienic and sanitary law are constantly being thundered in our ears it is yet a fact that the sanitary condition of hospital and home, and city and town are such as to produce disease and death to many who ought not to die.

In the history of the ever-widening knowledge of our art the relationship of medicine and surgery become more and more intimate. The factors in the production of disease are proven in many cases to be due to germs, and (injuries) as wounds—whether surgical or otherwise—are shown to be more readily manageable in proportion as cleanliness and disinfectants are and have been tried. Processes are now known to be putrefactive and septic, hence the relation which the special causes of these conditions bear to wounds and other processes of disease are relations of primary importance. It has been claimed that the "exudation" material does not depend upon the presence of germs. That depends upon the fact whether inflammation is upon a free surface or entirely subcutaneous. "It is claimed that the germs are also found in subcutaneous injuries, while again others claim that septic organisms are primarily the source of all inflammatory and other troubles to which wounds are liable." To one acquainted with the processes of cure in wounds in different individuals there can be no doubt that the processes of putrefaction differ very widely, and this is owing to various causes and conditions. In one case the vital state of the individual; 2, the immediate surroundings of the patient; 3, the cleanliness which is observed, all have much to do in the history.

Lawson Tait, one of the strongest and perhaps most uncompromising opponents of Listerism, while at the same time the most exquisite as to methods of cleanliness, yet shows most remarkable results without the aid of anything save excellent knowledge and clean hands. He draws a distinction and asserts a difference between germs upon the living and dead tissues, alleging that it is introduction of the latter—conveying germs and dead elements of tissue—which causes such serious consequences. In this, he is at least partly right and may be wholly so, as witness what occurs in the deep recesses of organs when dead elements are changed in form and become lodged in various structures as fibrin from the valves of the heart thrown into brain, lungs or liver followed by inflammation, abscess and consequences. Here there are no germs. Yet Stokes makes answer to this objection and argument thus, "That those who hold this view ignore the elementary fact that there never was a wound, and especially one in which vessels are tied or twisted, in which dead and living tissues are not at once brought into contact." "Also, if dead material is necessary for the growth of germs the abscesses which are found infested with myriads of bacteria in pyemia and in ulcerative endocarditis are difficult of explanation."

It must be true if we would comprehend the changes in the bioplastic material in health, that we must also understand the capacity of this material for living under greatly altered conditions and which varies greatly as we descend from higher to lower forms, the highest being destroyed by a slight alteration in the conditions, while lower forms of matter resist destruction and for long periods of time. The pus corpuscle and the particle of contagium, both of which are descendants of the germinal matter of the organism retain their vitality under conditions which would be fatal to the germinal matter from which they spring. Hence we can easily understand the statement of Mr. Tait, "That the bioplastic exudation from a wound in healthy tissues has a vitality of its own, often superior to the most active germs, and either fails to furnish them the necessary pabulum or walls them in from producing further damage and finally eliminates them from the body as is found in a localized abscess."

But mark the difference which is manifested in a devitalized patient in the processes of the growth and multiplication of these germs. Many blastema distinguished by their ready coagulability (dependent upon the fibrin contained) do not rise above the lowest grade of form development, and if germs of disease or any other kind find admission into such material or blastema it is easy enough to see that the development of cellular forms in harmony with the law of organization or development can not go on in order and harmony.

In the discussion of surgical questions in various parts of the world, we find developed marvelous improvements in English, German, French and American surgery during the last decade, and it becomes us carefully and patiently to investigate the causes of

such progress. If it be assumed that men are mistaken as to the merits of antiseptics in the surgical treatment of wounds throughout the world, to what then is to be attributed the great advance in success and the lessened mortality. When we take up the question of evidence we find Lister himself from 1876 to his British Association address presenting the doctrine and methods; and Mr. Savary in his British Association address on surgery at Worcester, hurling denunciations against Listerism while Tait and many others are arrayed as outspoken opponents, having tested it to their satisfaction. Savary, in this address, claimed from the statistics of St. Bartholomew's Hospital, as good or better results without the use of antiseptics. He also read another paper before the British Medical Congress of 1881, "On the Causes of Failure to Obtain Primary Union in Operative Wounds." He claims "that the remarkable improvement in the surgery of to-day is due to better sanitary arrangements, yet Mr. Savary admits two things: 1, the germ theory of putrefaction; 2, that his method is essentially antiseptic, embracing carbolized catgut ligatures, carbolic oil, drainage, washing the wound with a solution of permanganate of potash, or some other potent antiseptic.

Stokes, of Dublin, in his British address not only vindicates Listerism, but answers Savary by stripping his address of all its pretensions, and brings out the admissions which he makes and yet so beautifully covered up by his touches of eloquence. Keith, the ovariotomist, a very competent witness, says: "For some time I have not found carbolic spray necessary, and have not used it in my twenty-seven last cases, all of which have recovered easily. With every possible care, the spray has not in my hands prevented the milder septicemia, and its effect upon the kidney was sometimes disastrous. I have seen hemorrhages from the kidney follow long operations, and two deaths in hospital patients were occasioned by carbolic acid poisoning. Though I had at one time a series of eighty recoveries under spray, I have reluctantly given it up, believing that on the whole it did more harm than good." Lister, in his discussion of the question, Is the spray really necessary? replies with candor thus: "In other words is there sufficient chance of the air of an operating theater or private room containing septic matter which can prove effective in blood serum to make it needful to regard the question of contamination from the air at all? If the answer must be given in the affirmative and the choice must lie between the spray and antiseptic irrigation during the operation at intervals, or with syringing the cavity of the wound after dressing and with every precaution, then I should give my voice decidedly in favor of the spray, as being more certain of attaining its object and involving less irritation of the wound, and also in the use of carbolic acid much less risk of carbolic poisoning." He says further: "I should not feel justified, except on perfectly established grounds, in omitting any part of the technique by which results so important to our fellow creatures have been arrived at. Finally, if further investigation should confirm the conclusion to which our recent facts seem to point and it should indeed be proved that all idea of atmospheric contamination of our wounds during operations may be thrown to the winds, then no one will say with more joy than myself: 'Fort mit dem spray.'"

Notwithstanding the earnest advocacy of careful antiseptic surgery by such men as Esmarch, Volkman of Germany, Spencer Wells, Thornton, McCormac, Gant, Prof. Humphrey of England, Dr. J. Marion-Sims, now dead, (all honor to his memory) with many others, the reports of the British Congress made out a verdict that antiseptic surgery had received its doom and Listerism was dead. And so the refrain has been gathered up and echoed across the continents, and the AMERICAN MEDICAL ASSOCIATION, at St. Paul, through its members proclaimed with added proof that "Listerism was dead."

Why this refusal of men in both hemispheres to accept the doctrine, if tested by sufficient experience; if not proved then wait the results of more patient and conservative testimony before reaching a final judgment. It must grow out of the impatient restraints of dogmatic teaching, or otherwise it grows out of hasty and imperfect conclusions by men who ought to be in such positions as would enable them to decide upon the value of antiseptic treatment. So late as Nov. 5, 1883, the discussion before the London Medical Society was protracted an hour beyond the usual time of adjournment to hear Prof. Lister answer the objections made to his doctrine and practice. Bryant, author of a work on surgery, made a strong case against Lister's teachings. The subject under discussion was Lister's address, and the special question was the management of recent fracture of the patella by wiring the fragments together. Besides Bryant, Adams, Bloxam, Gant, Morris, Rose, Turner and Baker concurred in the opposition to the doctrines of Lister, and Bryant contended that strict Listerism was not necessary in order to be perfectly in accord with the grand principles of antiseptic surgery, which in the minds of the opposition means strict cleanliness in everything pertaining to the dressing of wounds, as well as the most perfect hygienic conditions about the patient. "Bryant thought that any operation upon the patella was unjustifiable, because the results of the old-fashioned treatment were in his experience quite satisfactory."

So we find Listerism is not accepted in Lister's own home in London, yet we should expect that the fiercest fight of ideas will come from men who live in his own city, verifying the old aphorism, "That a prophet is not without honor, save in his own country." Coming directly to the facts of the subject, Do they sustain the extraordinary claims of antiseptic surgery, it would seem that the verdict of the two great medical associations, British and American, ought to be able to settle this question, yet we are of the opinion that the verdict will be made by a more universal congress than either; the matured judgment and opinion resting upon it of the surgical thought and experience of the world. When this verdict of judgment will be rendered is still in the future. It may be long after Lister has departed, when his works shall be freely weighed and estimated. In such a vast problem it is very difficult to obtain reliable data, as "facts seem to have a special aversion to registration." Statistics alone can in time show the bearings of this question; in the question of suturing the broken patella we have the results in forty-nine cases which show 16.3 per cent. of suppuration of knee joint, 6.12 per cent. of deaths, 4 per cent. of necrosis of fragments, 4 per cent. of amputation of thigh—and which results completely negative the dogmatic assertion of Lister in his address that "antiseptic treatment converts

serious evil into *complete* safety." In favor of the operation it must be said, "that a large majority recovered with bony union and excellent use of the joint." But let it also be remembered that in eight cases there was suppuration of the joint and other grave difficulties—as exhaustion, death, pyemia, amputation; and in others which recovered of the eight there were stiff joints and necrosis of fragments.

Ovariotomy is not now regarded as a very dangerous operation. Its dangers have been greatly diminished by the precautions which have been thrown around it by antiseptic methods, and yet it is believed by many, among whom are Keith and Tait, that the antiseptic method is not so valuable here, while Lister himself regards his method in this field as least successful. Spencer Wells in this field has the most remarkable experience and which sweeps over a wider range, giving it as his unqualified opinion that both in safety and rapidity of recovery it is the most efficient and protective of agencies. Keith has abandoned the use of the spray, but is not inclined to the use of the method so much as formerly.

We have not time to review the broad field of surgical endeavor and must close without attempting a statistical review of the various kinds of operations and wounds resulting, as the statistical evidence is not yet full enough, nor complete enough with all the conflicting evidence in the question to determine the full value. In the cases of compound fractures, and other open wounds affecting large joints, are found a class of cases which furnish the best proof of the value of antiseptics. Prof. Volkman reports seventy-five successive cases of compound fracture without a death, and does not hesitate to claim that without infection there is no suppuration, and that to obtain primary union, by which is meant immediate union, two factors are necessary; complete disinfection and absolute opposition, so that the parts have the chance of growing together. "While admitting," Volkman continues, "that a depraved constitution and a devitalized condition would render the patient less able to resist the influences of germs or poisons, he asserts as a demonstrated clinical fact "that such patients have a revivifying bioplastic power sufficient to afford immediate and complete repair if treated antiseptically." We doubt this, as stated, because it is as fully demonstrated that there is an organic dyscrasia, by which is meant some "unknown *aberration of nutrition*" in certain cases, which can not be remedied by any processes yet made known to us. This dyscrasic state of the blood is a factor in disease now recognized by the leading teachers of medicine in the world, among whom are Vogel, Libert, Rokitansky and many others. Hence, while using disinfectants the general question of nutrition must be comprehended. We have said these organisms are found in this relation *post puerperium;* hence the question arises, What relation exists between these and septicemia?

The fact of existence under the circumstances indicates some present relation. No condition exists in such cases by which these could so readily find admission to the interior of the body as after a lying-in or confinement. These changes are believed to be septic changes in the uterus, and the modes of introduction. There are three modes of infection: 1, absorption by the lymphatics; 2, extension of septic changes along the mucous membrane of the Fallopian tubes into the abdominal cavity, as seen in the ovaritis by the gonococcus, which is a typical case in gonorrheal inflammation. This affects the lymphatic system, as seen in the enlarged inguinal glands, but its most permanent effects in the female are due to extension of inflammation along the mucous surface to the peritoneal cavity; 3, *direct passage* of septic matter into the circulation, as by the two first methods the septic matter reaches the circulation and causes or may cause metastatic abscesses in various organs. The uterus, under the conditions after delivery, presents most favorable conditions for such development. The veins close by thrombosis, and the septic material containing the microörganisms are rapidly thrown into the circulation. The latter method is the most likely mode of infection in this case.

If we would understand the present state of our knowledge as to the relation of microörganisms to puerperal septicemia, we must study the literature of the subject. Here we shall no doubt find a solution of that much *questio vexata* of puerperal fever, and here we may find a firm basis of pathologic facts, instead of vague theories and changing views or notions, upon which to ground a successful treatment.

HISTORICAL RÉSUMÉ.

The literature of this subject is fully brought up to about 1880 or 1885 by Dolores and monographs by Lusk, a more recent one by Lomer, and a beautiful work by Woodward. Hare gives an exhaustive description of pyemia and allied conditions. Attention was first directed to the subject in 1869 by Coze, Feltz and Mayerhofer of microörganisms as a cause of puerperal fever. They have been found since by others. They have been traced from the diphtheritic lining of the endometrium through the lymphatics, into the peritoneal cavity, and also by the lymphatics through the diaphragm. Pasteur, the celebrated investigator of organisms, recently applied to the study of hydrophobia, has given his investigations in seven cases of puerperal fever, various forms of germs being found in the progress of this disease. The exact relation of germs to the development of this disease and septic poisoning generally has not yet been satisfactorily tested, but there have been established some very important facts, viz: That we have the same pathologic changes in puerperal as we have in surgical fever, and that these hold the same relation to the germ theory. In most cases we have to do with blood poisoning from wounds identical in pathology with the poisoning of the blood from an amputation wound.

The conclusion from all that is known is that the condition of the interior of the uterus occupies the same position as to the septic poisoning as the stump of an amputation wound. The lochia gives valuable information as to the state of the uterine surface, but we should remember that we may have septic absorption going on when there is no factor of the lochia. We must distinguish between putrefying matter and septic matter, as all putrefaction within the uterus after delivery will cause septic poisoning, but all septic poisoning does not imply that putrefaction must have occurred as to the fluids. This difference grows out of the difference in the microbes which mark each process.

Finally, the germ theory receives confirmation from the fact that those substances which are shown to be

the most effective in the destruction of germs have proved most useful in the treatment of septicemia. It is a fact well observed and established beyond question that washing out the uterus with antiseptics in cases of puerperal fever is followed by most remarkable results in the reduction of temperature and pulse. Carbolic acid was first the favorite remedy, but solutions of bichlorid of mercury seem to possess so many advantages that it is among the most popular remedies because it is more destructive to germs. Toxic effect has been charged to both remedies, but bad results only occur in improper use or strength. So I would use solutions which destroy germs and produce antiseptic results, and thus save cases from the development of those much to be dreaded forms of disease, pyemia, septicemia and puerperal fever. This answers the questions at the head of this paper, and shows us that prevention in surgery as in medicine takes the form of the trans-Atlantic writer: "The medicine of the twentieth century, viz: Sanitary science and surgery."

THE TREATMENT OF OPEN FRACTURES.

Read by title in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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If aseptic surgery had been practiced only in the treatment of open (compound) fractures, it would have accomplished much for humanity. It is safe to say that there are not one half as many amputations performed since the commencement of the present treatment as formerly. Lives have been saved that otherwise would have been sacrificed, and useful limbs are now seen where a few years ago, a wooden substitute was worn as a perpetual reminder of the shortcomings of the surgical art. The aseptic treatment of an open fracture requires first the thorough cleansing of the limb and the wound. The limb should be shaved and washed clean. Irrigation with boiled water is the best means of securing cleanliness of the wound. If there should be venous oozing, it should be stanched with hot water, or irrigated with a bichlorid of mercury solution 1 to 4,000. The styptic effect of this solution is at once seen in the bleaching and drying effect produced. Any spurting vessel should be tied with carefully sterilized catgut. The next step is to secure accurate coaptation of the fragments, sharp splinters (spiculæ) should be removed, but broad fragments, even when considerably comminuted, should be readjusted. The elevator and the heavy bone forceps will be frequently needed to bring the fragments into position. It is well known that the principal causes of non-union, outside of constitutional causes, are: 1, want of apposition; 2, interposition of muscles; 3, excessive motion. Every care should be taken therefore to avoid these causes of non-union.

Direct fixation of the fragments is one of the most important indications. This may be accomplished by periosteal suture or bony suture. I have many times secured good union in bones of the foot, for example, by the periosteal suturing of the fragments. Chromicized catgut or whale tendon should be used, and a sufficient number of stitches taken to bring the fragments together. In case the obliquity is such the fragments can not be brought together by periosteal suturing, then the osseous suture may be made; after trying many expedients, and experimenting with many kinds of suture, I have reverted to silver wire as being that best adapted to the work. These sutures in some soft bones may be passed obliquely through with a stout needle, but generally a small drill hole must be made to enable the passing of the wire. The wires must after twisting, be left long and project from the wound so as to facilitate easy removal.

I have had no experience with the use of bone dowel plug placed in the medullary canal to secure fixation. It has seemed to me so liable to be septic, and there must be so many practical difficulties in the way of final removal, as to make it a dangerous appliance.

In five cases I have used the bone ring introduced to the notice of the profession by Professor Senn. In every case there was suppuration, and I have abandoned it, until such time as we shall be enabled to sterilize the ring. It is yet so far from perfection in that regard, as to make it almost certain that the wound will become infected. The principle may be yet found useful by the invention of some different material. The bone ring (or thimble) has one advantage, that is the great amount of exudate (forming callus) which is excited by the presence of the ring. So pronounced is this effect, that in cases of ununited fracture where there is no attempt at the formation of callus, the ring may be used to advantage notwithstanding its general lack of sterilization.

The condition of the soft parts must next be looked to. Indeed it is a matter which is scarcely secondary to the proper treatment of the fractured bone. Wounded tendons, torn muscular structures and lacerated nerves should be sutured according to the rules laid down for the respective tissue involved. Stout chromicized catgut will be found useful for tendons, and fine flexible catgut for nerves. In case the distal and proximal ends of a nerve or tendon can not be brought together, they may be sewed to the nearest adjoining nerve or tendon. All this takes time, but it will be well spent. When the wound is cleaned the bones are brought together, and the soft structures thus attended to, then irrigation is again practiced and the external wound closed by sutures of silkworm gut. Extension is usually not necessary if the fragments have been brought into perfect apposition, nor is there much difficulty in retaining them. External support should be secured by a plaster-of-paris bandage, and when necessary a fenester cut opposite the wound.

In complying with the wishes of our distinguished chairman, to keep within the ten minute line, it will be seen that I have chosen rather to support the existing practice, than to compile the literature of the subject, and if more attention shall be directed to methods of suture of the soft parts, in addition to bone fixation, the paper will have served its purpose.

FISSURE OF THE ANUS.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY THOMAS W. HUNTINGTON, M.D.

SACRAMENTO, CAL.

The lesion known as fissure of the anus is an elongated oval ulcer from one-fourth of an inch to an inch in extent and of variable depth. By many authors it is designated irritable ulcer or painful

ulcer of the anus. Bodenhamer classified fissures, according to location, into four varieties; but for the purpose of this paper the term will be applied to those having their seat in the skin and mucous membrane, external to the white line of Hilton, the line of demarkation between the external and internal sphincter muscles. The favorite location of anal fissure is upon the dorsal surface but this general rule has many exceptions. It may consist of a small linear abrasion, capable of detection only by careful inspection, but more often it will be observed as an indolent ulcer with indurated base and rigid walls varying in depth from one to three lines. Externally its existence is often marked by a superficial hemorrhoidal tumor, the "sentinel pile" of Ball. Upon exploration with a probe it is customary to find one or more excessively tender points within the boundaries of the ulcer. There is a tendency to hemorrhage in many cases but this condition is by no means constant.

Anal fissure has been observed occasionally as early as the first year of infant life, and is now and then met with in persons of advanced age. A very large proportion of cases, however, occur during the period of adult life between the ages of 30 and 55.

It is generally alleged that it is found oftener in women than in men but my own observation does not verify this statement. For obvious reasons, persons leading an inactive or sedentary life are more subject to anal fissure than are those whose employment demands active physical exercise. Among the various causes to which this lesion is ascribed, the chief and most apparent one is habitual constipation. Constipation in turn that may have been accidental and quite amenable to simple treatment, having resulted in the establishment of a small fissure is by the latter rendered incorrigible through the peculiar reflex influence of the ulcer upon the sphincters, the rectum and the digestive organs in general. As a result we find that the gravity of the structural lesion and the functional derangement correspond closely.

Anal fissure is a common and serious complication of all structural diseases of the rectum. Pain when an attendant circumstance of rectal ulcer, hemorrhoids, rectal stricture and syphilitic manifestations always suggests the possibility of the co-existence of anal fissure. In penal institutions the practice of sodomy is an alleged cause of this lesion, and violence done the parts by scratching in pruritis ani, and forcible distension during parturition are among the more infrequent causes of the same trouble.

Allingham alleges the earliest symptoms of anal fissure to be morning diarrhea. The patient is called to stool instantly upon arising, but usually with an unsatisfactory result, a small loose motion containing viscid mucus matter sometimes streaked with blood. This is succeeded by tenesmus and an uncomfortable burning sensation, and the experience may be repeated several times during the early hours of the day. As the disease progresses it is characterized by intense, agonizing, paroxysmal pain during and subsequent to an evacuation. This symptom is wholly out of proportion to the pathologic lesion which underlies it, and as often attends an apparently trifling erosion as a deeper more extensive ulceration. It undoubtedly depends upon the exposure of filaments of the pudic nerves, which are distributed over the area below and adjacent to the external sphincter. In pronounced cases this pain is described as well nigh unbearable, and the act of defecation is regarded as an ordeal so terrible that the patient is often compelled to seek relief in the hypodermatic use of morphia. It usually persists for a protracted period, during which absolute quiet in the recumbent position is rendered imperative. Temporary relief ensues but the suffering recurs with each effort to unload the rectum.

Numerous reflex disturbances are also ascribable to this condition. Obscure and tantalizing bladder pains are common to both sexes. Prostatic irritability in the male, uterine colic and ovarian neuralgia in the female are frequently noted. The appetite is impaired, the digestive function badly sustained, nausea and vomiting ensue, and the resulting condition is that of emaciation and extreme nervous irritability and prostration.

An effort at digital examination is always stoutly resisted by the patient on account of the exaggerated sensibility of the part, and in a fair proportion of cases this step can only be taken after the production of profound anesthesia.

Since several small fissures frequently exist, some of which may be deeply concealed by anal folds, the use of a speculum is essential to a thorough knowledge of the situation. For this purpose I have found a heavy wire bivalve instrument exceedingly efficient, in that it permits an almost continuous view of the entire anal circumference.

There is a wonderful unanimity of sentiment regarding methods to be adopted for the relief of this most distressing malady. It is certain that the disease, save when it occurs coincidentally with malignant trouble is amenable to some form of treatment.

Cases which are a sequel of syphilitic infection are successfully met by the usual constitutional remedies, combined with the use of mercurial ointment locally.

In recent and comparatively mild cases scrupulous cleanliness, careful attention to the bowels, an abstemious diet, cessation from labor, and the application of a stimulating ointment will suffice to effect a permanent cure. I have found an ointment composed of a drachm of creolin and an ounce of lanolin a very efficient agent. To this may be added belladonna, cocain or opium as occasion may demand. I believe the use of nitrate of silver has been generally abandoned. In the more advanced and urgent cases, pure nitric-acid, or acid-nitrate of mercury retain a few advocates. It is probable that they may be useful where a resort to more radical and seemingly rational measures is prohibited by the patient. Cooper and Edwards, however, in their work upon diseases of the rectum and anus unhesitatingly denounce the use of caustic applications of all kinds as "useless and mischievous."

Matthews, on the other hand, for those cases wherein radical measures are inadmissible, employs pure carbolic acid as a topical application and as supplemental to this he highly recommends a daily injection of an olive oil emulsion of iodoform, 5 grains to the ounce. The frequent occurrence of a persistent and annoying dermatitis in the anal region, as a result of the use of iodoform, has led me to abandon it entirely. We know that the skin of many patients is peculiarly susceptible to the irritant effect of this drug; and this fact has caused me to regard it always with distrust.

Under the head of radical treatment two plans are included; dilatation and incision. Owing to the ex-

treme sensitiveness of the anal region neither method should be attempted without the use of an anesthetic.

If simple dilatation is to be resorted to, it may be accomplished by inserting one or two fingers of both hands well into the rectum, and stretching the sphincters by drawing upon them in all directions; or the same end may be attained by the use of a powerful speculum. The process should be persisted in until the sphincters become perfectly relaxed, and must usually be repeated several times before perfect relief can be obtained. It is claimed, however, that a single introduction of a speculum for purposes of examination has now and then completely eradicated the difficulty.

The combined plan of treatment by dilatation and incision has been found so efficient and satisfactory that it has received the sanction of by far the larger number of operators. By no other method can we hope for so rapid and perfect relief from the main feature of the disease, the excruciating pain which attends and follows an evacuation. The details of the procedure are very simple. The rectum having been thoroughly washed out and the patient etherized, the fissure is exposed between the blades of a speculum. A free incision is then made through the floor of the ulcer extending at either end considerably beyond its limits. If the lesion be of long standing and deep seated, the knife should be carried into and across the border of the external sphincter muscle. Subsequently the process of dilatation should be fully completed as before described. After treatment consists in maintenance of cleanliness and attention to the bowels.

A PLEA FOR THE EARLY AND SYSTEMATIC REMOVAL OF THE INGUINAL LYMPHATIC GLANDS.

IN CASES OF MALIGNANT GROWTHS IN REGIONS FROM WHICH THESE GLANDS RECEIVE LYMPHATICS.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY H. REINEKING, M.D.
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The rule that operations for the removal of malignant growths should include also the removal, not only of glands already perceptibly enlarged from secondary deposits, but also those which from their anatomic relations to the primary growth are likely to become the seat of secondary disease, as now quite generally followed in operations for mammary cancer, has been productive of much good. The fact that we can not determine by our examination whether a gland, though not perceptibly enlarged, may not after all be the seat of a secondary deposit, and the further fact that when those glands nearest the primary seat of disease have become enlarged, others more remote may in turn have become infected,—these facts form a sufficient argument for the general adoption of the above rule wherever practicable.

I was somewhat surprised therefore, on looking up the literature on malignant growths of the external genitals and the lower extremity, to find how little was said in our standard text-books concerning the management of the inguinal glands in such cases.

Two cases occurring in my practice during the last half year, brought the importance of this subject to my attention so strongly that I concluded to use them as a text for this plea for early attention to the glands in such cases:

Case 1.—M. K., male, aged 48 years, single, farmer, German. Family history good, except that one brother died of cancer of the stomach when 27 years old. Phimosis since childhood. During the summer of 1892 noticed swelling at end of penis. This was followed by inability to void urine, use of catheter, purulent discharge from the swelling and hemorrhage. Penis amputated near its root, March 20, 1893. No glands extirpated at that time. Several weeks later some enlarged glands were extirpated in the left inguinal region, but others in the same locality, as well as in the right groin, began to enlarge almost immediately.

Present condition (July 4, 1893) appearance of cachexia, although general nutrition fair; stump of penis healed, except a small granulating surface around urethral opening. Testicles healthy. Both groins occupied by large masses of enlarged confluent glands, those on the left in a more advanced stage, and the skin covering them sloughing, the abdominal walls considerably involved, the masses very painful. Thorough removal being out of the question, parenchymatous injections of pyoktannin were tried, which was effective in so far as they prevented all odor; but the disease progressed rapidly and ended in death Oct. 3, 1893, less than seven months after the primary operation. There was no return at the primary seat of disease nor any evidence of metastases in internal organs.

Case 2.—Mrs. D., aged 67 years, married, American. Family history shows no cases of malignant disease. Severe pruritus and eczema vulvæ for past fifteen or twenty years; lately severe burning and sharp pains. Examination shows a flat epithelioma, about an inch in diameter, involving the clitoris and upper portion of the left labium minus, which was excised Nov. 18, 1893. Careful examination at this time failed to detect any enlarged inguinal glands. Healing rapid, mostly by first intention. About five weeks later, several glands in left groin became rapidly enlarged and were extirpated Jan. 11, 1894. No infiltration outside of the gland capsules. Glands contained large cysts filled with grumous, semi-purulent matter. Every particle of gland that could be detected by the touch was removed. Healing again rapid, leaving a small fistulous track leading to the bottom of the wound, with slight grayish, liquid discharge. Recurrence in same locality within a month, the swelling increasing rapidly involving the skin and occupying the entire left inguinal region. The right side remained unaffected. Third operation Feb. 15, 1894. Removal of entire contents of left inguinal region, including skin, adipose tissue and glands down to the deep fascia, as well as the glands lying along the large vessels and belonging to the deep inguinal group. The removal of all the tissues mentioned was not difficult, the region of the vessels being left until the very last. Wound partly closed and packed with iodoform gauze; it remained in good condition, but showed no tendency to heal. The patient rallied well from the operation, but after a week began to fail from exhaustion, or possibly, secondary internal complications, and died March 4, two and one-half weeks after the last operation and less than four months after the extirpation of the primary disease. No return at primary seat of disease.

These cases show clearly that there must have been secondary deposits in the lymphatic glands at or before the time of removal of the primary disease, notwithstanding the fact that they were not perceptibly enlarged. They further show the great tendency of malignant disease of the external genitals to secondary location in these glands, and the great malignancy when once it has become thus located.

If malignant growths are of local origin, the early and thorough removal of the primary disease, as well as of those structures which are almost invariably the first foci of secondary invasion, can be reasonably expected to lead to a fair percentage of permanent cures, as has been sufficiently shown by the results of extirpation of the cancerous mamma, with simultaneous clearing out of the axillary space. On the other hand, if the glands are left until they have become enlarged, the results will as a rule be very

similar to those illustrated in the cases just outlined.

Why, then, not apply the rule which has long since been adopted in cases of mammary cancer, with equal force and regularity to the cases here under consideration? The difficulties and dangers of the operation for removal of the inguinal glands are certainly not greater than those attending the operation in the axilla, and the same may be said of the after treatment of the wound. After the skin has become involved, a large and disagreeable wound may indeed be left, just as in other regions, which fact is only another argument for adopting the extirpation of these glands as an essential part of the operation done for the removal of the primary disease.

I have limited my remarks to cases of malignant disease affecting the external genitals. All that has been said, however, pertains as well to the lower extremities, skin of lower portion of abdomen, and all structures sending lymphatics to the superficial or deep inguinal glands. For anatomic considerations and surgical technique I must refer to works on these subjects.

BLOODLESS VAGINAL MYOMECTOMY.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association held at San Francisco, June 5-8, 1894.

BY OSCAR J. MAYER, M.D.
SAN FRANCISCO, CAL.

Probably no question of abdominal surgery has given rise to more animated discussion and bitter controversy than the treatment of uterine fibroids in all their three varieties—submucous, interstitial and subserous. After electrolysis failed to realize the hopes that were held out to the profession by Apostoli, laparo-myotomy and abdominal hysterectomy were once more eagerly resorted to, and led to many modifications in treating the pedicle so as to avoid hemorrhage and infection. Present indications are that all these methods will soon be discarded for the more correct and ideal operation of removing the uterus *in toto*. Arrest of growth of the neoplasms was sought by bringing about artificial menopause following oöphorectomy. More recently, ligation of the uterine and ovarian arteries has been recommended to effect atrophy of the growths and uterus. Vaginal enucleation is only applicable to such tumors as either can be pulled through the cervix, or those that appear as fibroid polypi, having their seat in the body or cervix of the uterus. The removal by morcellation, as originated by Péan, of large submucous myomata or pediculated fibroids distending the cavity of the uterus, although favorably recommended by many eminent surgeons, has never found much favor with the profession at large. The reason of this is the excessive hemorrhage that endangers the life of the patient. Some authors supplemented Péan's morcellement by first splitting the cervix bilaterally as far as the vaginal junction, and extending these incisions even into the body of the uterus itself, if necessary, to have the required room for their operations, and then ligating the uterine arteries to control hemorrhage. These preliminary incisions into the cervix and uterus have been regarded as such severe preparatory measures that most surgeons prefer abdominal hysterectomy.

The preservation of the womb of a young woman is a matter of most vital importance, and our aim should be a conservative plan of treatment that will remove the benign neoplasm, and will not carry in its wake sterility fraught with such momentous psychical and physical sequelæ. In the following case in my practice, I have successfully removed a fibroid tumor by morcellation, without any hemorrhage to speak of, by means of *temporary ligation* of the uterine arteries, having first caused obliteration of the cervix and dilatation of the os by vaginal packing, inducing contractions similar to the first stage of labor:

Mrs. H., age 28, of previous excellent health, gave birth five years ago to a living child, passing a normal puerperium. Since then her menses were regular until ten months ago, when about two weeks after menstruation, patient had a hemorrhage which lasted about two days, accompanied with pains in the back and groins. From then on, hemorrhage occurred at irregular intervals, with more or less pain. Four months ago, while constantly losing in weight and strength, patient noticed an increase of abdomen, which was very hard to the touch. Consulting a notorious quack, he pronounced the growth to be a cancer, and patient became alarmed about her condition. During the past eight months patient had lost forty pounds, and at the time of consultation weighed ninety-eight pounds. The lower abdomen protruded, the uterus was plain to the touch, enlarged and perfectly smooth, the fundus a finger's breadth below the umbilicus, corresponding in size to the fifth month of pregnancy. Auscultation revealed no sounds over site of uterus. The os was sufficiently dilated to permit the entrance of one finger, which felt a hard smooth mass. The digital examination caused quite a hemorrhage, so vaginal packing with iodoform gauze was employed to check it. Twenty-four hours after the packing was removed, the cervix was found obliterated, os dilated to the size of a silver dollar. Removal of the tumor, per vaginam, was proposed to the patient, and at the same time permission was obtained that if this should prove unsuccessful, abdominal hysterectomy should be resorted to, to remove the growth and uterus.

The idea suggested itself to me to try and prevent, or to reduce hemorrhage to a minimum by passing a temporary ligature *en masse* around the uterine artery. The vagina having been thoroughly irrigated with a 2 per cent solution of lysol and a Martin posterior speculum *in situ*, the field of operation was still further enlarged by retractors. With a strong volsellum forceps seizing the tumor, tumor and uterus were strongly pulled downward and to the right side in order to bring into view the vaginal junction of the cervix. With a large, strongly curved needle, threaded with a double thread of No. 12 braided silk, a ligature *en masse* was applied around the uterine vessels, by entering the needle well anteriorly to the transverse median line of the fornix, bringing it out equi-distant posteriorly to that line, and the two ends of the ligature were then securely tied. The uterus including the tumor being strongly pulled toward the left side of the patient, a temporary ligature *en masse* was applied to the uterine vessels on the right side. Morcellation of the fibroid was proceeded with by means of a pair of Sims' scissors, guided by the finger, which resulted in bringing forth forty-eight small pieces of the tumor until sufficient room was made to deliver the large remaining mass by traction. The weight of the tumor was nearly four pounds. Before the operation the tumor must have measured six and one-half inches in diameter. This was ascertained by enveloping the removed pieces in a towel and measuring the circumference of the enclosed mass. The uterine cavity was packed with iodoform gauze and the temporary ligatures were removed. Patient was given two hypodermic injections of ergotin. The time required for the operation was one hour, during which time the patient did not lose more than two or three tablespoonsful of blood. Twelve hours after the operation the intrauterine tampon was found forced out of place to more than half its extent, and showed very little bloody discoloration. The second day after the operation, the remainder of the tampon was removed, and as a precautionary measure the patient received a hypodermic injection of ergotin. Patient was kept in bed for twelve days, passing an uneventful time toward recovery, the temperature at no time rising above 99.2 on the evening of the operation. On the twelfth day patient left her bed, a convalescent, rapidly gaining in weight, until now she shows an increase of twenty-six pounds.

Despite the free anastomosis existing between the ovarian and uterine arteries, the circulation can temporarily be arrested for a sufficient time to allow of a bloodless operation being made on the cervix or in the uterine cavity, as was demonstrated in this case. While the anastomosis of the ovarian and uterine arteries is quite free, I do not believe that the collateral circulation is as easily and quickly established as it would appear from accepted drawings illustrating the vascular supply of the uterus and its appendages. Dr. J. H. Barbat, Demonstrator of Anatomy in the Medical Department of the University of California, who kindly assisted me in this operation, has carefully dissected out the vessels supplying the female organs of generation in a well injected subject, that he might ascertain the exact anastomoses and sizes of anastomosing vessels between the ovarian and uterine arteries. Further researches on this subject are necessary to substantiate my skepticism and will be published by Dr. J. H. Barbat as soon as his labors are completed.

The danger of including the ureter in the ligature can be avoided if the needle is not passed too close to the cervix. Even should this occur no apprehension need be felt, as temporary compression of the ureter for such a short time will not cause any evil consequences. Puncture of the uterine artery is avoided by selecting a strongly curved needle of large size, taking care that the needle traverses a large semicircle from its entrance in the anterior fornix to its point of exit in the posterior fornix vaginæ. Injury to the intima of the uterine artery from compression is not to be feared any more than injury to the vessels by using Esmarch's constrictor for bloodless amputations.

Bloodless operations are one of the triumphs of modern surgery, and with the great discoveries of the last fifty years, which enable us to operate without pain to the patient, and which have reduced to a minimum the danger of infection, conservatism should guide us in all surgical procedures. The time is fast approaching when the surgeon who removes an organ, except as a last resort, will have sinned against nature, and will by his very act pass sentence upon himself in the forum of Medicine.

THE USE OF ACETANILID IN MEDICINE AND SURGERY,

WITH SPECIAL REFERENCE TO ITS SURGICAL APPLICATIONS, INCLUDING ILLUSTRATIONS OF ITS USE IN MINOR SURGERY, AND ITS ACTION IN TWO IMPORTANT CASES INVOLVING OTHER IMPORTANT FEATURES.

Read in the Section on Surgery and Anatomy, at the Forty fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY G. W. WOODS, M.D.

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Acetanilid is a synthetical compound produced by the inter-action of anilin with glacial acetic acid at a high temperature, the distillate being collected at 295 per cent, and re-crystallized from boiling water.

It appears in shining crystalline plates, in powder colorless and odorless having a greasy feel, is neutral to test paper, and has a feeble acrid taste. It is soluble in 31 parts of alcohol, in ether and chloroform, and its alcoholic solution permits of large dilution with water without precipitation. It melts at 113 Cent., forming a clear liquid, and is decomposed by acids and alkalies. Exposure to moisture and mixture with water does not affect its integrity.

An easy test for acetanilid is heating it with liquor potassæ and a few drops of chloroform, when a distinctive odor is developed partaking of the nature of phenyl and ethyl compounds, said to be phenyl-isonitrile. Another is the boiling of 6 grains with 1 drachm of acid-hydrochloric until the mixture becomes clear, and then adding 3 drachms of water with 4 drops of acid-carbolic previously dissolved in a half drachm of liq. sod. chlorinat. This produces a turbid pink solution, becoming blue on the addition of excess of ammonia.

The use of acetanilid, or antifebrin, its copyrighted title, or chemically, phenyl-acetamid, dates from 1887, when it was first brought to notice as an antipyretic, and classed therapeutically from its analogous effects on the system with those other but recently introduced remedies, antipyrin, and phenacetin.

As an antipyretic, acetanilid has sustained all that it claimed for it, and where given in moderate doses has never indicated the slightest poisonous or depressing effects even in children. Where toxic symptoms have been manifested they have followed an administration of the drug in the same manner as antipyrin, while the dose should be graded to one-third of the latter drug. It is adapted to every form of fever, the continued, enteric or malarial, and eruptive, and to all inflammations associated with high temperatures, but should be carefully watched for fear of individual idiosyncrasy and, commencing with small doses of 2 to 3 grains, be increased, if necessary, not to exceed a half a drachm daily, save where indicated to combat the more intense forms of pain.

In spasmodic affections such as asthma, pertussis and epilepsy, as a nervine and analgesic in the worst forms of neuralgia and rheumatism and, in fact, to all affections characterized by spasms or pain it is especially applicable; and in cerebral congestions, the delirium of fever, and even in delirium tremens it acts as a most satisfactory sedative and hypnotic.

In its effects on the temperature its influence is manifested more slowly than antipyrin; it is diuretic and diaphoretic; and while antipyrin is a positive cerebral sedative and general depressant, acetanilid while hypnotic, is rather a moderate stimulant to the cerebral, muscular and vaso-motor systems.

I have thus epitomized the experience and observations of seven years in the world-wide use of this drug in medicine, deeming it unnecessary to present any clinical notes as evidence, the periodical literature of our country during this period having offered an abundance of detailed reports establishing the facts enumerated. These bear testimony of a convincing character to the usefulness of acetanilid, and demonstrate the propriety of making it a permanent addition to the drugs we should always wish to have within our reach, as necessary to us as opium and its alkaloids, and the derivations of cinchona bark.

Thus much for medicine! But acetanilid has surgical applications of even greater importance, although until recently its external use was derided, and yet its antiseptic powers were long ago recognized and it was recommended as especially applicable to the preservation of aqueous hypodermic solutions. The only surgical indorsement it had hitherto received had been from Dr. K. P. Wasilevitch, who had found

it an admirable substitute for iodoform as an application to primary venereal sores, which had healed with great rapidity under its local application.

This was the status of acetanilid in surgery until less than a year ago, when a modest communication to the *Medical News*, (Vol. lxiii, page 438,) from Dr. Francis W. Harrell, of Gilman, Washington, announced its remarkable adaptability to the dressing of lacerated wounds. He states that he was led to use acetanilid simply from its being non-hygroscopic, and he first applied it to an extensive lacerated wound of the skin and muscles of the lower arm and fore-arm. The surfaces were cleansed with warm water and the substance applied freely, the only sensation being described as a "peppery" one and of brief duration. Within twenty-four hours the wound was examined and no pus found. Again it was dressed as at first and not disturbed for a week, when the wound was found to be completely healed.

Dr. Harrell is the surgeon-in-chief of the Seattle Coal and Iron Company's mines, and the surgical cases coming within his cognizance are principally wounds grimed with dirt, coal, or mineral dust, and oil, which can not be completely cleansed save with great difficulty; but under acetanilid healing progresses perfectly without pain, the formation of pus or poisonous effects from absorption.

Dr. Alfred Hand of the Surgical Dispensary connected with the German Hospital, Philadelphia, Pa., reports in the *Medical News* of March 10, 1894, that in the wide experience of this establishment the results have been excellent, especially in the lacerated wounds of mechanics imbued with dirt, oil and foreign bodies; that acetanilid has completely displaced iodoform, and permits of immediate resumption of work and the saving of fingers and toes, where formerly amputated under similar conditions. Its use has been extended to all forms of ulcers, venereal sores and moist eczema.

Dr. Charles H. Castle, of Cincinnati, Ohio, Resident Physician of the Cincinnati Hospital, in the *Medical News* of March 31, 1894, records its use in over two hundred and fifty cases including all forms of lacerated wounds, especially those of the scalp, incised and gun-shot wounds, venereal ulcers and burns. He first flushes surfaces with 1 to 40 solution of acid. carbol, dusts with acetanilid, and covers with gauze and protective, the result being that no pus forms. With him, acetanilid has entirely superseded iodoform, and the only objectionable feature has been a burning pain when applied to any extended granulating surface.

Another record is that of Dr. M. E. Knowles, of Hamilton, Montana, who has used acetanilid extensively in surgical veterinary practice, and found it especially adapted to the closing of fistulæ, first cleansing with peroxid of hydrogen.

My personal surgical experience with acetanilid is confined to twenty cases of lacerated wounds and operations, and the list embraces some new experiences and applications of this remedy.

After the removal of a keloid tumor from the hand, I employed acetanilid as a dressing with the result of perfect immediate comfort and rapid healing, without the formation of pus; I have found it an admirable and curative application to internal hemorrhoids and a satisfactory dressing in the form of a suppository after their removal by the Paquelin cautery; I have also employed it in solutions of dilute alcohol —acetanilid grammes 4; alcohol c.c. 2; aquæ ad c.c. 500—in blennorrhagia, and with most satisfactory results, salol being administered at the same time, however. In a long fistulous tract of the right side of the neck, connected with a deep cervical gland, dipping down to the region of the deeper blood vessels, I succeeded after curetting the accessible portions, in closing the sinus by means of the above injection.

I herewith offer a brief clinical history of two cases of importance illustrating the efficiency of acetanilid in aborting or controlling the formation of pus, and the manifestation of an alterative effect over a large granulating surface following an extensive burn, affected also with an intercurrent eczema—of which there was a previous history—and incidentally its toxic effects through absorption.

Case 1—was that of a Japanese mess attendant from the U. S. S. *Alert*, who received bruises of the left thigh during a typhoon near Yokohama, Japan, on August 19, 1893, while en route to San Francisco, which eventuated in plegmonous erysipelas. He was admitted to the U. S. Naval Hospital, Mare Island, Cal., September 23, with multiple abscesses on the inner side of left thigh, and extensions from this region to the iliac crest and sacrum, with an opening of discharge in the first mentioned site; and on the inner aspect, near the groin, two sinuses leading deeply and upward to other accumulations of pus. Counter openings were made in both situations, at the most dependent portions, and on the following day another opening over the tuber ischii to relieve a posterior pocket of pus. The discharge was abundant from all these openings and the temperature, which has been as high as 103.6, fell to 100.4. The integument was widely separated, forming large cavities, and from the openings there was estimated to be discharged daily from 200 to 400 cubic centimeters of purulent matter, necessitating two dressings each day, and thick coverings of absorbent material. Three days later another large cavity was opened, burrowing around the femoral. From this time with thorough drainage and thorough cleansing with sol. hydg. bich. 1 to 2000, there was some improvement, a diminished discharge and contraction of cavities, with general improvement under the most careful administration of stimulants, concentrated nourishment, and appropriate anodynes to relieve the constant aching pains in the limb. The temperature fluctuated between 99 and 100.4. October 20, an increase of temperature was noted, gradually rising to 103, and October 25, an extension of suppuration was perceived towards the groin, and an incision was made in the inguinoscrotal angle but no pus was found; on October 30, however, it forced its way into the incision and 200 c.c. was discharged. Again, the high temperature maintaining itself, a new focus was searched for, and found in Scarpa's triangle on November 2, a large incision giving exit to 250 c.c., which exit was subsequently extended by another incision, just below Poupart's ligament, and a drainage tube passed through both openings. It will thus be seen that the thigh of patient was for one-half its circumference, and extending from Poupart's ligament and the cresta ilii, a series of subcutaneous abscesses penetrating the muscular septa, discharging more or less profusely, and from time to time making new extensions. At this juncture, with no signs of permanent abatement of the existing conditions, and patient greatly prostrated, the employment of acetanilid suggested itself, and on November 9 its use was commenced. At first the sinuses and cavities were washed out with either warm solutions hydg. bichlorid or carbolic acid, and afterward powdered acetanilid was forced through the openings. This was an awkward and unsatisfactory way of using the remedy and yet it soon showed evidences, of controlling the pus formation. On November 21, another pocket of pus was found in Scarpa's triangle and, on probing, was found to extend into the gluteal region, where a counter opening was made which was enlarged on the 28th, this being the last incision. On November 22, it being well demonstrated that the acetanilid was acting favorably, it was determined to find some way of testing it more thoroughly, and, the alcoholic solution employed as a urethral injection was made use of. With this the cavities were thoroughly irrigated daily, and improvement commenced at once the discharge diminishing, the pain almost annihilated, sleep refreshing, appetite rav-

enous, digestion excellent and strength increasing rapidly. In a month the discharge was practically annihilated and on Jan. 18, 1894, the cavities were obliterated and the openings had healed without the formation of large cicatrices. There was some contraction of the skin, and slight ankylosis of the hip and knee joint, with the leg in a partially flexed position from the prolonged disuse of the limb and rest in bed, with the leg habitually drawn up; but this condition is being gradually overcome without tenotomy or other operation being demanded.

Case 2—was that of Mr. X., a native of Germany, for many years a citizen of California, and the proprietor of a brewery which he personally superintended. The interest of this case lies in the constitutional effects of acetanilid being manifested on its application to a large granulating surface, the apparent grave condition without any recognition of this fact by the patient, its alterative effect without repetition being demanded over the entire surface, and its apparent control over an inter-current eczema. The case was one in which I was called in consultation by Dr. W. D. Anderson, a prominent practitioner of Vallejo, Solano County, Cal., and during his illness was in sole attendance on the patient for a considerable period, Prof. A. M. Gardner, of the University of California, and Superintendent of the State Insane Asylum at Napo, being the primary consultant.

On May 23, 1893, Mr. X. was scalded by his left leg slipping into a tub containing a boiling infusion of hops, the scald extending from nine inches above the knee to the ankle, the foot being saved by a closely-fitting congress shoe of thick leather. Brewer's yeast was applied as soon as the clothing could be cut from the limb, and after medical assistance had been summoned, carron oil was substituted; morphia was administered, and patient kept under its influence for a prolonged period. The scald was beyond the second degree, and the result was a sloughing of the entire cutaneous surface within the area indicated, involving the entire substance of the true skin. Profuse suppuration followed, and it was variously treated with iodoform, aristol, hydrogen peroxid and hydro-napthol, each application acting well for a time and then losing its efficacy.

On July 15, the surface being covered with healthy granulations, it was determined to employ skin grafting and, witin a period of eight days, 2,280 grafts were inserted by Drs. Anderson and Gardner, 40 persons contributing the grafts, not one of them having a history of either venereal or eruptic disease. These grafts were obtained from the skin covering the biceps, which was cleansed with soap and afterward with peroxid of hydrogen. They were raised with mouse-tooth forceps, severed with curved scissors, averaged fifty mm. by sixteen mm. in size, and placed immediately upon the surface previously cleansed with hydrogen peroxid. They speedily attached themselves, vitally, and the leg soon demonstrated its new covering, especially on the calf, where the current of pus had swept, and crowded the grafts, but islands appeared everywhere. The progress of repair went on rapidly and on September 6, when Dr. Anderson, becoming seriously ill, had to absent himself from the case, the surface was so nearly healed that the patient was expected to be out in a week.

About this time eczema appeared, and just subsequent to this date developed rapidly, when the newly-formed tissue began to break down, and the patient's wife becoming greatly alarmed, treated the leg to a coating of hot mutton tallow, an old German remedy. It was evidently applied at too high a temperature, the result was the separation of nearly all the imperfectly vitalized new tissue, save on the central posterior aspect of the limb, but here the grafts had formed a firmer covering, and the islands more anteriorly, still persisted. The suppuration again became abundant, forcing up the thick coating of tallow in little craters, which were found to be the seat of eczematous pustules, and the whole tallowy coating being removed three-fourths of the surface was found to be apparently returned to its condition before the grafting, with the added complication of an extensive eczema.

It seemed as though the work had all to be done over again, for we did not then hope for the persistence of the grafts, and the development of the pus in such abundance with the eruptive complication was discouraging. Hydriodic acid had been prescribed at the earliest appearance of the eczema, by Dr. Anderson, who had observed on the other limb evidences of its former existence, and now specific, alterative and tonic remedies were prescribed with a view to influencing the eruption more decidedly. Locally the changes were rung for some time on the old applications, embracing bismuth subnit., sodii bicarb., iodoform, aristol, peroxid of hydrogen, hydro-napthol, and lastly pyoktannin, without any appreciable improvement. In the end I proposed the use of acetanilid, stating my experience in its use as aborting suppuration and in consultation, it was decided to give it a trial.

The suppurating and eruptive surface was carefully cleansed with carbolized boiled water, and the superfluous moisture being absorbed by borated cotton was freely coated with dry acetanilid and covered with antiseptic lint. It produced, at once a burning sensation which patient complained of bitterly, but this effect was transient and in half an hour had completely passed away, when at 3 P.M., patient was left in a state of complete comfort and tranquillity. Not long after midnight of this day, November 17, Dr. Anderson was called from his sick-bed to see Mr. X., the message being that he was in a most alarming condition. On reaching the patient he was found to be completely tranquil himself, and protesting against the excited state of his wife who was, naturally, greatly alarmed at the pronounced state of cyanosis he presented. The face, especially the nose and lips, as well as the extremities of the fingers and toes were blue.

The pulse had been, the wife thought, weak and slow when she had first noticed the blue color of his lips and nails, and later accelerated; but when the Doctor responded to the summons about 2 A.M., the patient's heart was tranquil and the pulse only exhibited a great fullness, as distinct from its ordinary character, while the temperature was normal and respiration natural. Beyond the fullness of the pulse there was absolutely no changed condition except the cyanosis, which gradually passed away in twenty-four hours. The appearance of the limb was peculiar, and persisted for several days. All the granulations had a shrunken desiccated look, like cutlets of beef long exposed to the atmosphere, the pustules were scarcely demonstrable, and there was absolutely no formation of pus for forty-eight hours. A consultation determined against the further use of acetanilid, in consequence of the poisonous effects manifested, and on the third day, aristol was substituted at my suggestion; but there is no doubt that a permanent effect was produced on the open granulating surfaces by this one application and the eczema influenced in an equal degree. We are warranted in this conclusion as from this day the healing process went on rapidly, the eczema disappeared and on March 9, the patient went abroad with a good covering of skin, save at the seat of two small ulcerated surfaces, where the original injury had affected the superficial muscular fiber, and with scarcely any cicatricial tissue, most of the original grafts having survived through the many months of profuse suppuration and eruptive irritation.

Not many cases of poisoning by the use of acetanilid have been recorded, and the one cited through its external use is unique. In all, cyanosis is noted with pale and haggard face, nose, lips, and extremities of fingers blue, pulse slow and weak, and a slightly subnormal temperature, in fact an apparent collapse; but in none did it seem to be a grave condition, the patients in no sense showing the anxitey of those around, slight stimulation soon overcoming the disturbance of the circulation. The essential toxic effect of acetanilid would seem to be an interference with the physiologic process of blood oxygenation, rather than a disturbance of the circulatory and respiratory functions, the cyanosis being persistent after the normal reëstablishment; or, as Prof. O. L. Potter expresses it: "The toxic effect is to destroy the ozonizing function of the blood, decolorizing it, and forming methyl-hemoglobin." Poisonous effects have followed 30 grains taken in two doses within a period of two hours; yet 100 grains taken by Dr. Simpson, of New York, in seven doses within a period of two and one-half hours produced no toxic effect whatever.

As a summary of its surgical advantages, I beg leave to present the following enumeration. It is; cleanly, odorless, antiseptic, desiccant, hemostatic, stimulant, alterative, non-toxic practically, lasting in its effects, if intermitted, does not crust, easily

removed; and it acts in these ways, when perfect cleansing of a wound is impracticable; while it is a perfect substitute for iodoform at an insignificant cost; and is not injured or altered by moisture, as it may be saturated with water, and being drained and dried, is found to be unaltered.

With these advantages, acetanilid should be welcomed to the outfit of all surgeons, but especially to those of the Army and Navy, this simple enumeration of its excellencies seeming certainly to demonstrate its special adaptation to the field and campaign work of the former, and similar duty in connection with landing parties and shore duty of the latter; in time of war, its application to all wounds being soothing, beneficial, avoiding the necessity of immediate, careful, antiseptic cleansing, and permitting of delay in completing the final surgical attention in most cases a delay often as necessary as desirable on shipboard, on account of the rolling of the ship or stress of weather.

CHRONIC PROSTATITIS AFTER GONORRHEA.

I. ITS CLINICAL PATHOLOGY—II. ITS MICROSCOPIC AND BACTERIOLOGIC ASPECTS.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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I.—CLINICAL PATHOLOGY.

We desire to call your attention to a new method of examination and treatment for a certain form of prostatitis, which is very often found as a sequela of a prolonged and severe posterior urethritis.

Our knowledge of the pathology of specific urethritis has increased more during the past ten or even five years than on any other subject in medical science. All our ideas upon the etiology, pathology and treatment of this affection have entirely changed through the successful bacteriologic researches of the last few years. Further, we have learned to diagnose all possible complications of gonorrhea since rare culture methods of the specific microörganisms, the gonococcus Neisser have been made on modified blood serum by Brunner and Wertheim.

The difficulty connected with the study of this microörganism has always been and is at present to ascertain the presence of gonococci in all the organs secondarily affected by the specific malady. We are still in want of an easy method of demonstrating the gonococci and differentiating them from non-infectious diplococci. But the rapid progress made by continued bacteriologic investigations upon the features of this microörganism will in the near future surely solve this question. Every physician will then be able to give a decided opinion upon the possible danger of infection after gonorrhea, just as easily as for instance in tuberculosis by finding the tubercle bacilli.

Comparing both constitutional affections—tuberculosis and gonorrhea—we are fully justified in stating that as important as it is for the patient himself and his possible cure to find the specific microörganism in tuberculosis, it is just as important to demonstrate successfully the diplöe gonococcus Neisser after a prolonged chronic gonorrhea, on account of the possible danger of infection an individual might have for others. It is evident that by our present methods of examination it is often impossible to state whether a chronic posterior urethritis has entirely died out or not. Experienced gynecologists coincide in the statement that in cases of posterior urethritis where by objective examination nothing could be found and as subjective symptoms existed the female genital apparatus was very heavily infected. It is worthy of note, that Zweifel says in his latest work upon gynecology: "This disease (or chronic urethritis) has a strictly social danger and wives and families even were then syphilitic, for it produced zoöspermia and sterility in males, and sterility and general debility in females."

You will readily coincide with me that every contribution which throws more light upon the question, at what time a chronic posterior urethritis can be considered as cured or is no longer infectious, must be gratefully received by the medical profession.

While in Europe last year, Dr. Posner, of Berlin, told me that in his opinion the infection in cases of posterior urethritis apparently cured might be produced by the secretion of the diseased prostate gland, which is pressed out at the moment of ejaculation. In an important contribution upon this subject this same author first called our attention to the fact that by examining the prostatic secretion much benefit might be derived as regards an exact diagnosis in obscure cases of posterior urethritis. Where by digital palpation of the gland and microscopic examination of its secretion a chronic inflammatory condition of this organ could be ascertained, this chronic prostatitis was in his opinion in almost all cases complicated with an insufficient action of the ejaculatory ducts, or even with chronic spermato-cystitis. The anatomic basis for Posner's suggestions was given a few years later by Finger of Vienna. In a number of cadavers where the prostatic portion of the urethra showed chronic gonorrheal affections he found the glands of the prostate the seat of periglandular as well as endoglandular infiltration. Very interesting is the fact that in a considerable percentage of cases thus examined passive pathologic conditions of the ejaculatory ducts could be found, namely, an obstruction of the ducts by an invasion of round cells. To such conditions, apparently, ejaculation is difficult or prevented.

We therefore have sufficient reason to believe that the residue of chronic gonorrhea lies here. It is evident that by the insufficient action of the ejaculatory ducts, as well as by the cardoglandular infiltration of the prostate, infectious material is retained in the deeper appendages of the posterior urethra.

Lately v. Schlen, almost simultaneously with myself[1] has utilized the investigations of the authors above mentioned to devise a new method of examination, by which positive results may be obtained where our previous methods failed to furnish any infectious material. Let the patient urinate at first in two portions, keeping a portion of urine in his bladder. As a rule these first two portions appeared to be almost void of threads, pus, etc. Then the prostate gland is forced out from the rectum and immediately afterwards the fluid and last portion of urine is voided which was uniformly cloudy, containing abundant material of an infectious character.

In palpating the prostate of many cases suffering from chronic posterior urethritis for this purpose, I could ascertain the fact that in a large percentage this organ was rather enlarged, of unequal consist-

ence and often painful to the touch. None of these patients complained of any of those symptoms generally ascribed to a subacute or chronic form of prostatitis. I am inclined to think that this condition of the prostate must be considered as an extension of the gonorrheal infection from the posterior urethra to the prostate gland and the peri-prostatic tissue. The deeper the inflammation extends the more it loses its violent character. If these glandular organs are once infected those remedies which will readily remove the infection from the urethral canal will certainly not influence the morbid condition of these organs owing to their anatomic structure and the insufficient action of the ejaculatory ducts.

I therefore concluded, with the valuable aid of Dr. Spencer, to systematically examine our entire clinical material of cases of posterior urethritis to ascertain what rôle the prostate gland plays in the infectious process. In order to exclude possible errors in drawing conclusions from our investigations, we have at the same time examined a number of persons who never had suffered from gonorrhea. In all cases the prostatic secretion was acquired by pressing open the gland from the rectum, the fluid was then examined microscopically and bacteriologically by Dr. Spencer, who will give you his report in addition to mine, and will illustrate the importance of our investigation through some excellent drawings.

As I proceeded in my investigations I began to utilize his method of pressing out the prostatic secretion for therapeutic purposes. At first in a number of cases the palpation of the prostate was quite painful. Later all tenderness gradually disappeared. I therefore combined with my diagnostic object in pressing out the prostatic secretion, a systematic massage of the gland and could very soon macroscopically as well (in the appearance of the fluid) as microscopically (in the gradual disappearance of pus cells) notice a decided improvement. At the same time in those cases which presented subjective symptoms the symptoms gradually disappeared under the beneficial influence of the massage.

One case will illustrate the satisfactory results obtained by this method:

Patient C., aged 29, consulted me early last winter. He had suffered from repeated attacks of gonorrhea, a slight discharge having been present for the last two or three years. In the last eight months he had been under very able treatment in New York, as well as here, with the result that all discharge had disappeared and no other symptoms were present. As he intended to marry shortly he wished to satisfy his mind upon the possible danger of infecting his future wife. In this case the two-glass method gave a negative result, both portions being absolutely normal. In palpating the prostate from the rectum it was found slightly enlarged and the left lobe was very painful to the touch. The microscopic examination of the prostatic secretion showed an abundance of pus cells. The third urine portion, voided after the expression of the prostate was cloudy and contained several threads, in which there were found gonococci. I advised the patient to postpone the wedding, which he did. Meanwhile I treated him with systematic massage of the prostate with the very satisfactory result that after two months all threads had disappeared while the prostate appeared to be normal in every way. His wife is perfectly healthy up to date.

Since then I have treated several other cases similarly, and desire to mention particularly one case in which we both, Dr. Spencer and myself, after each expression of the prostate made a careful microscopic and bacteriologic examination of the prostatic secretion. Here the gradual decrease of pus cells was accompanied with the disappearance of subjective and objective symptoms. In another case I have to report that the improvement is only very slight up to date. Undoubtedly this method will fail to give satisfactory results where the prostatitis is complicated with a severe chronic spermato-cystitis.

Our material has not been large enough at present from which to draw absolutely certain conclusions. Even in the limited number of normal cases we could obtain for our purposes we could occasionally notice an invasion of round cells, indicating a congestive condition of the prostate. This was in one case most decidedly due to a hyper-irritation of the genital apparatus by masturbation. The positive value of our investigations still lacks the presence of gonococci in the prostatic secretion of any of our cases. Dr. Spencer will give you his reasons why the absence of gonococci in the prostatic secretion does not prove the absence of an infectious condition of the gland. Still I am ready to confess that the positive proof of a gonorrheal prostatic can only be obtained by the presence of the gonococci.

From our preliminary investigations—we intend to publish the result of our future studies upon this subject at a later date—I am convinced that much harm to the female genital apparatus will be avoided if any man having suffered from chronic gonorrhea is examined in regard to his prostatic secretion before marriage. No patient who has suffered from chronic posterior-urethritis can be pronounced as cured without an examination of his prostatic secretion. The best treatment—if no after symptoms of posterior urethritis are present—will be the systematic massage of the prostate. If symptoms of post-urethritis are still present the massage of the prostate might be combined with a local treatment of the posterior urethra.

II.—ITS MICROSCOPIC AND BACTERIOLOGIC ASPECTS.

As an indispensable adjunct to the rational therapeutics of chronic prostatitis, we must consider the microscopic phases of this affection. Owing to the limited time and material at our disposal, our observations are necessarily incomplete. Such as they are, however, they are of the greatest interest to the urologist, and importance to the patient. Owing to more or less imperfect diagnostic methods, the knowledge of the actual condition of the prostate gland has been left largely to chance. Reliance has been placed principally upon the subjective symptoms of the patient and the very meager objective symptoms which he presented. By the aid of the comparatively simple method of expression of the contents of the prostatic follicles, as outlined by my colleague, Dr. Krotoszyner, and by a microscopic examination of the expressed fluid, a great flood of light is thrown upon the actual conditions present.

The literature upon this important subject up to the present is exceedingly scanty. Fürbringer, of Berlin, may be regarded as the pioneer in the use of improved direct diagnostic methods of ascertaining the exact condition of the diseased prostate. A notable contribution is that by Finger, of Vienna, in the *Archives of Dermatology and Syphilis* in 1893, afterward incorporated in the last edition of his work on "Blenorrhea of the Sexual Organs." As my colleague, Dr. Krotoszyner, also refers extensively to this work, I will confine myself solely to the microscopic features. He examined the prostates of patients known to have had posterior urethritis dur-

ing life, but who died of intercurrent diseases. He found a number of cases in which the gland follicles were filled with desquamated epithelial cells. In such, during life, the prostatic secretion had shown nothing beyond a striking increase in the number of epithelia. In another group of cases examined in a similar manner, beside the desquamated epithelia, he found numbers of polynuclear leucocytes completely filling the gland tubules. In these cases, during life, the expressed prostatic secretion showed large numbers of pus cells in addition to the epithelia. Neither set of cases presented any subjective symptoms as affecting the prostate.

The last article on this subject appeared in the *Berliner Klinische Wochenschrift*, May 21, 1894, by Dr. Tonton, of Wiesbaden, entitled, "The Gonococcus and its Relation to Blenorrheic Processes." Among other matters he writes "that he believes in the possibility of a continuance of chronic inflammatory processes (in the genital tract), without the presence of gonococci." He further believes it reasonable to assume that the vascular lesion caused by the virus may outlast the virus itself and be the cause of continued exudation. An extension of the process is due to the presence of the virus itself.

In order to make comparisons which should be the more striking, we have expressed the prostatic secretions of a number of normal cases, who have never had a gonorrhea or any known inflammatory lesion of the genital tract. For present purposes it will suffice to describe the microscopic findings in three cases:

Case 1.—Age 19 years. Fluid expressed shows immense numbers of lecithin granules. Of these the majority are very minute in size; many are larger, approximating in size a red blood cell. They are perfectly circular in shape and present a uniform hyaline appearance. The majority lie free in the fluid or may lie on an epithelium, or corpus amylaceum.

There were numbers of medium-sized cells, presenting for the most part a densely granular structure, and containing several glistening bodies which were undoubtedly oil globules from a beginning fatty degeneration. The majority of these were simply granular.

There were moderate numbers of cylindrical epithelial cells from the gland follicles of the prostate. These presented a characteristic appearance of a long spindle-shaped cell body terminating in a long stem-like process. In certain cases this process branched at its extremity and formed two rootlets, as it were. Each cell contained a large oval nucleus, and was granular. There were a very few cells with one nucleus, which we regard as lymphocytes and of no pathogenic significance.

There were a few motionless zoösperms scattered about.

Case 2. Normal Prostate.—H. S., age 19 years. Fluid appeared in rather unusual amount for one of his age, at the meatus. Upon microscopic examination, there appeared numerous lecithin bodies as described in the previous case. A moderate number of medium-sized cells, presenting the granular appearance before referred to and also evidences of beginning fatty degeneration; corp. amylacea; a very few scattering cells, with one nucleus, which we regarded as lymphocytes; a number of the characteristic cylindrical epithelia; a few zoösperms.

Case 3.—H. H., age 24 years. Never had gonorrhea. Abundant lecithin bodies; abundant granular cells with a few showing fatty degeneration; lymphocytes; cylindrical epithelia, and corpora amylacea.

Case 4.—S., age 33 years. Although we have examined several cases of chronic prostatitis, this case will stand as a type in lieu of a detailed description of the others. The case has been under treatment for nearly six weeks. The fluid at first expressed contained an abundance of dense flocculent masses, which upon examination proved to be closely packed masses of pus cells. At the beginning the expressions were carried out about twice a week, and subsequently once a week. A striking feature of the fluid was the unusually large cells, which had undergone granular and fatty degeneration. These occurred in groups. There were also the numerous lecithin granules, as in normal cases; cylindrical epithelia, and a few zoösperms. With each succeeding expression, the diminution in the number and arrangement of the pus cells was very marked. After the second or third expression and instillation of silver nitrate solution, the pus cells ceased to appear arranged in the dense groups as at first. They became progressively more scanty and scattered through each field of the microscope. Finally, they were so reduced in number as to give evidence that the process had come to a close. A similar course obtained in the behavior of the pus cells in the other cases examined.

The corpora amylacea showed the structure of concentric laminæ, and more or less well-marked cleavage as one might be led to expect in crystalline structures. There were also a number of more or less cylindrical-shaped bodies, which consisted evidently of hyaline casts of the prostatic follicle, as described by Paget, Clark and Fürbringer. In this case there were large numbers of isolated pus cells. Many cylindrical epithelia as in the normal cases. Abundant lecithin granules. A few zoösperms.

Case 5.—S., age 43 years. Fluid contained an abundance of flocculent threads. Upon microscopic examination, these threads were found to consist exclusively of pus cells grouped in masses held together by a scanty amount of mucus. In this case there were numbers of corpora amylacea, fatty and granular cells, lecithin granules and epithelia, as in the previous case.

Case 6.—R., age 24 years. This case presented features resembling those of the previous case. The fluid expressed contained numerous shreddy floccules which consisted of densely grouped masses of pus cells, corpora amylacea, epithelia and zoösperms.

The importance of our diagnostic methods is well illustrated in Case 6. After apparent subsidence of all of the symptoms and physical signs of urethritis, an expression of the prostatic contents revealed the presence of an abundance of pus cells in the characteristic manner, thus necessitating still further treatment.

General Observations.—From our observation we have concluded that, in the normal cases, the large cells seemed uniformly smaller, and showed less of a tendency to fatty degeneration than in the cases of the maturer and infected cases. From this we are led to the deduction, that these bodies do not reach the large size, and show evidences of fatty degeneration, in young persons whose sexual functions are as yet in a more or less dormant state. In Case 2, in which the sexual function was already somewhat active, we observed an increase in the number of lymphocytes. While this increase may hardly be said to assume the importance of indicating some pathologic change in the prostate itself, yet we regarded it as evidence of a functional over-activity. It is interesting to observe that upon a subsequent attempt to obtain fluid from this case the fluid was distinctly sanguinolent and upon examination proved to contain large numbers of red blood cells. Upon questioning the patient we found that he had indulged freely in sexual pleasures on the day preceding our expression. Through this indulgence the prostate became undoubtedly hyperemic and, owing to the presence of round cells, showed a condition of irritability.

As regards the presence of the above mentioned hyaline casts, we agree with others that they seem to occur toward the close of a desquamative prostatitis, as verified by our own experience. In order to exclude all doubt as to the nature of those bodies which we have regarded as pus cells and lymphocytes, we treated them with a 20 per cent. solution of acetic acid. Upon clearing the pus cells were found to be uniformly polynuclear, and the lymphocytes mono-

nuclear. According to certain authors, there are mononuclear pus cells, but Ziegler's "Pathology" in the last German edition says: "Among the cells emigrating from the circulatory system, two forms may be distinguished, viz: mono- and polynuclear, and the term pus cell refers to the polynuclear forms."

Fürbringer, in his classical work, "Die Inneren Krankheiten der Harn u. Geschlechtsorgane," edition 1890, states, that pus cells may appear plentifully in prostatic secretion as a result of a catarrh confined to one gland follicle, and not of the entire organ. Under all circumstances the finding of the large and beautiful Böttcher crystals, determines the secretory involvement of the prostate. The addition of a drop of a 1 per cent. solution of ammonium phosphate to a drop of the expressed fluid on a slide, should show these crystals after the lapse of an hour. Further, he says: "It must be admitted, that these crystals may not be found in true prostatorrhea, because of extensive chemic changes in the gland secretion, especially in those forms tending to form necrotic areas and abscesses, also because of the admixture of urine." But the failure of this reaction by no means weakens the proof in the positive results afforded by their presence.

We have endeavored to demonstrate the presence of these crystals in each of our cases, according to the method indicated, but as yet without success, perhaps owing to the obstacles mentioned. Likewise in each case we have searched through many specimens for gonococci in the pus cells of the expressed secretions, but without success. Undoubtedly, with the advantage to be derived from examination of greater clinical material, our efforts in this direction should be successful.

Our method of staining for gonococci is one which has given us beautifully clear pictures, and generally brilliant results. It is that recommended by Lanz in No. 9 of the *Deutsche Medicinische Wochenschrift*, of this year. Briefly it is as follows: Spread on the cover-glass, dry and fix in the usual manner, being particularly careful not to overheat in fixing. Immerse from one-half to one minute in a 25 per cent. solution of trichloracetic acid. Wash, dry, and fix again. Then immerse for about five minutes in a solution of thirty cc. of distilled water, to which add enough of a saturated aqueous solution of methyl blue to give a deep blue tint, and one or two drops of a 5 per cent solution of caustic potash. The gonococci will appear deep blue, and the rest of the cells a lighter blue. A double stain may be produced by immersing the cover-glasses for a few minutes in a dilute solution of Bismarck brown. The cell protoplasm will take on a greenish or brownish hue, while the gonococci will remain unchanged. As a negative criterion in cases in which all other methods of determining the presence of gonococci fail, cultures may be made. They grow only on such media as blood-serum, serum-agar or blood-agar, in the form of minute dewdrop-like colonies. It is a distinguishing characteristic of gonococci, that they do not grow on plain nutrient gelatin or agar.

In conclusion, we must express our regret that our limited time and clinical material have not enabled us to give you more extensive results, but we trust that the little we have presented will serve as a stimulus to our colleagues to devote more time and painstaking methods to the examination and treatment of this hitherto somewhat unsatisfactory class of cases. If by definitely excluding all possibility of infection after an attack of specific urethritis, we may lessen the misery entailed on young wives through innocent contact with husbands pronounced free from infectious possibilities by their medical advisers, we may feel some degree of satisfaction; if in no other way, at least by curtailing some of the work of the gynecologists.

ON THE TREATMENT OF PHLEGMONOUS ERYSIPELAS AND OTHER FORMS OF SUPPURATIVE INFLAMMATION BY IMMERSION IN ICE WATER.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY HENRY BERGSTEIN, M.D.

RENO, NEVADA.

Phlegmonous erysipelas, phlegmonous inflammation, or pseudo-erysipelas, as Billroth terms it, I, in my earlier experience, found an intractable and destructive affection materially interfering with the future usefulness of the hand, the part most commonly affected.

After having treated a number of cases by the old method of free incision, local applications, hot fomentations, etc., with the usual results, it occurred to me that the rapid destruction of tissue was due to excessive heat, and that if some method of reducing the temperature were adopted the effect would be prevented. Cold has always been used as a method of treatment, with the added caution that it was liable to produce gangrene, as in these cases there is a natural tendency to that result. Pressure, such as would be produced by the application of ice would increase that danger, so the thought occurred to me to use immersion in ice water, and I will now cite a couple of cases treated in this manner:

In December, 1875, J. M., a half-witted fellow, becoming alarmed at something in the night, thrust his hand through a pane of glass. He came to my office the following morning, and I found an incised wound extending along the back of the hand from between the second and third fingers to the wrist. I brought the parts together with four silk ligatures, and giving him a carbolized lotion, told him to return in a day or two. He returned on the second day and I found the hand enormously swollen. The skin, of a roseate hue, with the well-known doughy feeling of erysipelas. I at once removed the stitches, and quite a quantity of ichorous pus escaped. I painted the surface with iodin, gave him the tincture of the chlorid of iron internally and ordered the application of flaxseed poultices. He returned on the following day, and the quantity of pus had greatly increased; the hand having assumed the well-known feeling of a bag filled with loose bones. I directed him to go home, fill a basin with water, and after putting in a large lump of ice to keep his hand completely and constantly immersed, and when he was ready to sleep, to wrap a towel, which had been previously dipped in ice water, around his hand and to renew the application every time he awoke, and, as in his mental condition he slept but little, it was kept pretty constantly immersed. In addition to the iron I had previously ordered, I gave him liberal doses of quinin, together with wine and nourishing diet. For the first twenty-four hours, I was rather uneasy about the treatment, visiting him every few hours to watch its progress. To my delight, suppuration ceased almost immediately, and to my amazement on the following day I found granulations springing up in various portions of the wound, which continued to do well and I discharged him at the end of twenty-one days, the wound being completely healed and the hand unimpaired.

In the practice of the country physician, cases of this character are not of common occurrence, and it was not until the summer of 1893 that a second case presented itself:

E. U., residing near Reno, working in a saw-mill, in some way brought the palm of his right hand in contact with a circular saw. He was attended by a *confrère* for eleven days, when the patient, finding his hand in a bad condition, and realizing that he was to be disabled for some time, and not being overburdened with this world's goods, concluded to go to the county hospital which was at that time in my charge. At that time his condition was as follows:

A large portion of the surface tissue of the palm of the hand had sloughed away, shreds of dead tissue hung from the denuded surface, also from a number of openings into the fingers, and pus in large quantities was being discharged from all the parts named, and from two openings at the wrist.

I first removed all shreds of dead tissue, then made a thorough application of pure carbolic acid, injecting it into all the sinuses, then carried out the same treatment as in Case 1, except that I substituted tartarized iron for the chlorid. For two or three days there was a slight discharge of pus, at the end of which time it ceased completely. Granulation springing up freely continued to complete healing of the wounds, which occupied seven weeks, when he was discharged with some slight impairment of the flexor muscles. After eight months of active exercise of the parts, he reported the impairment overcome.

I report these cases in the hope that this method may be given a trial and the results be reported, for if it proves as efficacious with others as it has in my hands, it must become an established method of treatment.

HOW LONG IS SYPHILIS CONTAGIOUS?

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY J. D. THOMAS, M.D.

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Syphilis has as clear and well defined a clinical history as characterizes the other contagious or infectious diseases. That the disease is due to a microbe is partially established, and the analogy that exists between syphilis and other diseases where germs are demonstrated as causative is so marked that there is little room for doubt. Some of the zymotic diseases are acute in their invasion and rapid in their career, while others are chronic. We may cite as extremes of this comparison, roëtheln and the disease under consideration. If roëtheln runs its course in comparatively a few hours he who would diagnosticate an eruption of ten days' duration as roëtheln would be a poor diagnostician indeed. All germ diseases run a certain period, and that period is individual or peculiar to each, after which convalescence takes place, or there follows certain sequelæ. These sequelæ are due to an alteration in nutrition or function or both. Original diseases are not reproduced from their sequelæ. After an acute disease is over there is no danger to others so far as the patient himself is concerned; the remaining danger lies in the fact that the germs may be lurking in drapery, walls, etc. The convalescent patient is not a factor. In diseases that are contagious only, or those that require inoculation for their reproduction, when the active stage has expired the patient and his surroundings are absolutely innocuous. Syphilis being purely an inoculable disease then when the zymotic period has exhausted itself the patient is no longer capable of conveying or transmitting the disease.

All zymotic diseases have a pretty uniform history of invasion, period of acme and period of decline. Syphilis is not an exception to this rule. Let us take, for instance, diphtheria. Six months after the disappearance of the active stage the patient may be suffering with paralysis. The paralysis is not diphtheria; the condition is not a contagious one; it is a sequel. No one has the temerity to assert that a person who has had scarlatina or smallpox continues to carry about, for months, in his system the germs of these diseases, although the one disease may cause, for an unlimited time, a suppurative otitis and the other a necrosed maxilla. Why should not the same reasoning hold good with regard to syphilis? Why should such a large number of the profession still hold to the idea that the sequelar lesions of syphilis are contagious? But recently I heard a gentleman make the statement to a medical society that he had treated a patient for syphilis ten years before the patient's marriage, and that after the marriage the patient infected his young wife. To me the statement was absurd—I did not deny the contagion but did the source. The belief by some that the contagious character of syphilis persists for decades is an error due to faulty observation or to a lack of observation. Without entering any further into polemics I make the assertion, in language more forcible than elegant, that patients may be rotten with the sequelar lesions of syphilis and at the same time indulge in intercourse and procreate offspring without conveying the disease to the one nor transmitting it to the other.

In corroboration of the above opinion I present for your consideration a few cases from my note-book—cases that have been carefully observed. Here are the facts:

Case 1.—In the summer of 1885 Mr. G. E. acquired a chancre on his lip through kissing a prostitute, and afterwards conveyed the disease to his wife. This couple have already several children. On March 3, 1886, to this couple a child is born which soon becomes cachectic and in a few months dies from specific marasmus. On May 30, 1887, at full term a macerated fetus is born. On August 31, 1888, a healthy looking child is born and does not develop the disease. On Feb. 17, 1890, another healthy child is born which has given no evidence of syphilis. On May 3, 1894, (the present year) an exceptionally fine boy, weighing twelve pounds, is born and remains well. During all this time this family has been under my exclusive care, so that my opportunities for observation have been unobstructed. The mother ceased to convey syphilis in less than three years.

Case 2.—Mrs. B., mother of three children, becomes infected through her husband. For three years after the infection she remained unimpregnated. During this time she was under my care, but in an irregular manner—presenting herself only when symptoms or lesions appeared. At the end of three years she became pregnant, went to full term, and was delivered, by me, ten months ago of twin boys. At the time the twins were born she had a serious tertiary lesion on her posterior fauces. On the tenth day the larger child died with eclampsia, but presented no signs of the disease. The smaller child has not been ill a day and is at present the picture of health. The period of contagion here lasted less than three years.

These two cases bear upon the heredity feature of syphilis.

Case 3.—Was called to see Mrs. C., who felt herself indisposed. On taking held of the wrist to examine her pulse I noticed an eruption. On further investigation this eruption, which was macular, was found to exist over nearly the entire body. In addition to the eruption there was sore throat and an adenopathy. I saw the husband of this woman privately. On putting the question, "Did you ever have syphilis?" to him he replied that he had had syphilis four years ago; that three months ago he entered the matrimonial state on the strength of the advice given him by his physi-

cian. Although I did not say so to the man I was perfectly satisfied in my own mind that the advice given was orthodox. So firm was I in my belief that this new wife did not receive the disease from her husband that at my next visit I made bold to tell the patient the nature of the disease and asked frankly how she acquired it; stating at the same time that her husband had had the disease and that he was safe from further infection. She denied the possibility of any other source of infection, but took my statement in such a matter-of-course way and with so much *sang froid* that I was satisfied that my premises were correct. This patient remained unimpregnated for two years and three months. At the end of the third year from her marriage I delivered her of a healthy looking child which, in a few days, developed a papular syphilide. After a prolonged treatment this child recovered. In another year after the birth of the first child this woman became again pregnant, was delivered by me at full term of a healthy child which is now 3½ years old and which has never shown any symptoms of syphilis. Now, to come back to the woman herself. After having by many devices attempted to get a correct history of her infection, at the end of four years she admitted having had intercourse with a man other than her husband the week before marriage. I ascertained from the physician of this man that four years before he did treat the individual professionally and that he was then in the active stage of syphilis.

Case 4.—Mr. D. and his wife called at my office. Mr. D. explained, privately, to me that he had been married but a few months; that his wife had an eruption which he feared was syphilitic; that he himself had been infected four years ago and as a result he had given the disease to his innocent bride. I saw this "innocent bride" alone and found the eruption spoken of by her husband. It was syphilitic. I said to Mrs. D., You have syphilis, you are perfectly safe in the companionship of your husband for he has had the disease and can never acquire it again. He did not give it to you, for too long a period has intervened since his infection. Now, you can make a confidant of me. She then admitted having had intercourse with an old lover about the date of her marriage.

These two cases prove the clinical fact that they were not infected by their husbands but by fresher syphilitics.

Case 5.—Mrs. E. was treated by me for syphilis. At the end of three years after infection she formed a *liaison* with a patron of mine who had never experienced the disease. This relationship was kept up for an indefinite period; the male in the case remained uninfected.

Further recital of cases would be tedious, although they are numerous enough. I have quoted no authorities, for this brief paper is intended as a purely personal contribution, the aim of which is to help establish the fact that syphilis can only be conveyed during the primary and secondary stages, and that the secondary stage ends not later than the third or fourth year from date of infection. I am sure that the chaotic views held by many of the profession in regard to the contagious period of syphilis is due to the acceptance upon their part of the word of the patient. We should not, and can not afford to, base scientific axioms upon the statements made by members of the laity. These statements are often studied deceptions; at other times they are honestly given but from ignorant premises.

A CONTRIBUTION TO SURGERY FROM ITS YOUNGEST SPECIALTY, DENTAL SURGERY.—THE SURGICAL ENGINE.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY W. G. A. BONWILL, D.D.S.

PHILADELPHIA, PA.

While every medical man has heard and read of this instrument for the past twenty years, but few have ever witnessed the application of it in the surgery of the bones and tissues. Outside of Philadelphia—my home—it has been but little used, so slow are surgeons to take hold of new appliances, and particularly this engine, which, to so many, seems so formidable that, while they can not doubt its great efficacy yet they fear to handle an instrument driven at the high speed of from one to twenty thousand revolutions a minute.

The dental engine had been tried for minor operations and was better than nothing; yet it was not until this duplicature of the human arm and hand was developed, that it was possible to call it a truly surgical engine.

This I present you to-day, is the only type that is of any value and is based on the surest basal principles of mechanics. It is not necessary to describe it in detail. Suffice it to say that a look at its working parts will satisfy the most skeptical that it must do all that is claimed for it.

As a further guarantee of its value in surgery, I need but mention a few of those eminent in this line. Both the elder and younger Gross, Agnew, of Philadelphia, and Horsley, of London. These are enough.

Be it said to the credit of the conservatism of surgeons, it would have been more largely used had I not parted with it and sold to a manufacturing firm, hoping to have it more extensively made and better and cheaper. But I made a great mistake. It is not too late to have it remedied. As you see it here in operation there is every element about it calculated to perform any operation in surgery on soft or hard tissues, and it is so simple any one can take care of it, and so cheap that any surgeon of extensive practice can afford to have one. Beside, it is so made that it is used for a dental engine and wherever it is to be found, in any town or hamlet, in the possession of a dentist, it can be borrowed at any time and made available for surgical work by simply adding to it a crank to give it higher speed; so that an amicable arrangement can be made with the dentists for its use, and they would be too glad to be of service in assisting the surgeon anywhere.

In this way the first cost to the surgeon is nothing, further than having a few instruments adapted for its special work which would be but a trifle. Then, its universal presence could be relied upon at any moment and anywhere if it is in the possession of a dentist. This one item, of combining the dental with the surgical power, must militate largely in its favor and one's surroundings can be adapted to its use. This argument is no mean one. While not so good for the manufacturer, yet to the *user* of it a favor not to be resented.

Up to the time of the death of both of the Professors Gross, not an operation on the bones was performed but I did it for them.

As to Prof. Horsley, of London, he said before the Washington Congress: "Thanks to one of your fellow-countrymen—Dr. Bonwill. Without this engine I would not like to undertake the formidable operations I have to perform on the skull for removal of tumors and treatment of nervous affections."

Its range enables you to perform the most delicate as well as the most extensive operations, and can be confined to 100 revolutions or run up into the 1,000 revolutions.

It will remove in a few minutes the hardest osseous tumor, or with the diamond will cut a stone in the bladder into atoms.

In plastic surgery wherever tissues are to be united

there is no loss of substance and success is more certain. In the bones, whether taking away the whole shaft leaving nothing but the periosteum for renewal of the parts—there is no necessity for opening into the bone further than merely exposing for access, thereby saving the severing of important arteries or interfering with nerve tissue. In the reduction of ununited fractures and the absolute apposition with which they are afterwards held by special appliances, it is of great value.

It can be used in fractures of the patella without opening into the membranes. Removal of the whole of the superior or inferior maxilla without other access than by the mouth. Its aid with its special appliances enables you in fractures of the skull to elevate the parts without trephining.

Removal of the bones of the coccyx has been done in a few minutes and no injury done to the rectum or shock to the surroundings. With a special instrument I have, the vault of the cranium can be entered at any point without a trephine, and of any shape, without any danger of injury to the dura mater or much loss of bone.

In operations upon the cervix, the diamond wheels it carries at high speed chafe off the hardened tissues with but trifling loss, and enables the parts to the more certainly be brought in apposition, and left nearly the normal size of cervix.

It is unnecessary to speak further of its possibilities, as the ingenious surgeon would soon see that it would be his constant companion and when once he had learned to manipulate it, it would be as much of a *sine qua non* as it is to-day a part of modern dental surgery.

No one can estimate the value alone in time saved in all cases and, from its high speed and capability of reaching 20,000 revolutions a minute, *pain* itself can almost or quite be annihilated or prevented, and if nothing more the shock is comparatively light, the effort at healing by first intention is made certain in every case, and from the smoothness of the bone cut, drilled, burred or sawed, there are no spiculæ of bone left to induce the least inflammation or necrosis.

THE NON-OPERATIVE METHODS OF TREATING ANAL FISSURE OR IRRITABLE ULCER OF THE RECTUM.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY LEWIS H. ADLER, JR., M.D.

PHILADELPHIA, PA.

PROFESSOR OF DISEASES OF THE RECTUM, PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE; SURGEON TO THE CHARITY HOSPITAL, ETC.

When anal fissure is of recent origin and not associated with much spasm of the sphincter muscles there is a fair prospect of cure without operative procedure.

This statement is made advisedly and in the face of a criticism published in *Mathew's Medical Quarterly*, (January, 1894, Vol. i, No. 1, p. 185) of the writer's brochure: "Fissure of the Anus and Fistula in Ano," (Physicians' Leisure Library Series, 1892. Geo. S. Davis, Publisher, Detroit, Mich.) in which the following statement is made: "It is a pity that this admirable little work wastes so much time in discussing the palliative (?) treatment of the disease," (fissure).

"In an affection so simple in its etiology and pathology and that can be so quickly and radically cured by divulsion of the sphincters, it seems a great loss of time to talk about applying ointments, when it is a recognized fact that not one case in ten is ever benefited by their use."

I do not doubt but that the reviewer quoted, honestly expressed himself in the statements made; and furthermore, that the opinion given,—that not one case in ten is ever benefited by other means than operative measures,—is based upon personal experience. But I must be pardoned for dissenting from the same views as my experience, while not an extensive one, is ample to justify a more conservative treatment of many of these cases.

I am well aware that the operative treatment of fissure is a simple procedure and that the disease is quickly cured by its execution; but I am likewise conscious of the fact that many persons object strenuously to any operation. No matter how trifling its import be to the surgeon, an operation to the patient is something which is dreaded, and it behooves the practitioner to remember that the majority of persons are unwilling to submit to an operation until they are personally convinced that such a course is the ultimatum.

It is my purpose in presenting this paper to indicate how over 75 per cent. of the cases of fissure of the anus which have come under my observation, both in hospital and private practice, have been cured by non-operative measures. No less an authority than Allingham ("Diseases of the Rectum," fifth edition, London, 1888, p. 215) states that the curability of this lesion does not depend upon the length of time during which it has existed, but rather upon the pathologic changes it has wrought. He also adds that he has cured fissures of months' standing by means of local applications, where the ulcers were uncomplicated with polypi or hemorrhoids, and where there was not any marked spasm or thickening of the sphincters.

It is essential to the success of the treatment of fissure by local applications, that rigid cleanliness of the parts be maintained; for this purpose the anus and the adjacent portions of the body should be carefully sponged night and morning and after each stool with tepid water. It is also highly important that attention be given to the condition of the patient's bowels. Regularity of habit should be established, and the evacuation rendered semi-fluid,—as figured or hard stools materially aggravate the symptoms. To accomplish these purposes, enemata or mild aperients should be employed, and the diet must be regulated, the use of bland and unirritating food being enjoined.

All drastic purges should be avoided, as they are more or less irritating to the extremity of the rectum. To establish a daily evacuation of the bowels and to render the movement as painless as possible, I am in the habit of ordering an enema of warm water, or one of rich flaxseed tea, say from half a pint to a pint, to be administered every evening; preference being given to the night time, as then the patient can assume the recumbent posture, which, combined with the rest, affords the most relief from subsequent pain.

If the first enemata should prove ineffective it should be repeated in half an hour. In order to relieve the pain and spasm of the sphincters attending the evacuation, it is well to use a suppository about

half an hour before the injection is employed consisting of

℞ Ext. belladonnæ . . . . . gr. $\frac{1}{6}$ ad $\frac{1}{6}$
Ext. opii aq. . . . . gr. $\frac{1}{4}$ ad $\frac{1}{8}$
Ol. theobromæ . . . . . gr. x

Misce, et fiat suppositoria j.

or an ointment of conium may be used, as recommended by Mr. Harrison Cripps, ("Diseases of the Rectum and Anus," second edition, London, 1890, p. 189):

℞ Ext. conii	ʒij.	8
Olei ricini	f ʒiij.	24
Ung. lanolinii . . . . . q. s. ad	ʒij.	64

A small quantity of this ointment should be smeared on the part five minutes before expecting a motion, and again after the bowels have been moved.

In applying any of the various local remedies to an anal fissure it is necessary first to expose the ulcer to view, which can be done by means of the fingers of the operator or his assistant, and to anesthetize its surface with a 4 per cent. solution of the hydrochlorate of cocain, well brushed in with a camel's hair pencil or with a piece of cotton attached to a probe. The application of the cocain may have to be repeated once or twice at intervals of three or four minutes in order to obtain the desired anesthetic effect. If any ointment has been used about the fissure, the anus should be subjected to a hot water douche before using the cocain, as this drug will not exert its anesthetic influence on a greasy surface, (W. P. Agnew, M.D., "Diagnosis and Treatment of Hemorrhoids," etc., second edition, San Francisco, Cal., 1891, p. 91).

Among the different remedies that have been used in the local treatment of fissure of the anus may be mentioned the following: Nitrate of silver; acid nitrate of mercury; fuming nitric acid; carbolic acid; sulphate of copper; the actual cautery; and chloral hydrate. Of these topical applications the nitrate of silver is the best. Its effects are various: It lessens or entirely calms the nervous irritation which is so important a factor in producing spasmodic contraction of the sphincters; it coats and shields the raw and exposed mucous surface by forming an insoluble albuminate of silver; it destroys the hard and callous edges of the ulcer, and tends to remove the diseased and morbid action of the parts. The form in which I usually employ this salt is in solution (from 10 to 30 grains to the ounce). The stick caustic may be also used.

To accomplish the best results, the solution should be used once in twenty-four or forty-eight hours, according to circumstances. It may be applied by means of cotton attached to a silver probe or to a piece of wood.

The application is made by separating the margins of the anal orifice with the thumb and the index finger of the left hand, and introducing into the anus the probe charged with the solution. The argentic nitrate is to be applied to the fissure only; a few drops are all that is required. If thorough local anesthesia has been induced by the use of cocain, the application of the silver salt produces little (if any) suffering, for by the time the anesthetic has lost its effect the otherwise acute pain of the nitrate of silver will have passed away.

After each application the part should be smeared well with an ointment of iodoform (30 grains to the ounce). The odor of that drug may be disguised by the addition of a few drops of attar of roses. Iodol may be used instead and in the same way, but I prefer the iodoform, owing to its anesthetic qualities.

After the ulcer has been touched once or twice with the silver solution the effect will be, in the cases that are benefited by this treatment, a considerable mitigation of the pain from which the patient suffered when at the closet and afterward, and the sore will present a healthy granulating appearance, and will slowly contract in size.

Unless the fissure be complicated with some other affection in children and in young persons, anal fissure is almost always curable by adopting the mode of treatment laid down.

Some authorities speak highly of the use of the acid nitrate of mercury, fuming nitric acid, carbolic acid, the actual cautery, etc., but in my opinion their employment is attended with more suffering than follows the use of the nitrate of silver. Furthermore, the application of these remedies is not so certain to effect a cure, so that I rarely resort to their use.

The daily introduction of a full sized bougie, made of wax or tallow, will sometimes act beneficially in cases of fissure by stretching the sphincter and producing such an amount of irritation as will set up a healing process in the ulcer. An application of cocain or of belladonna ointment should be made to the part previously to their employment.

In the treatment of anal fissure, Allingham strongly advocates the local use of the following ointment:

℞ Hydrarg. subchlor.	iv grains.		24
Pulv. opii	ij	"	12
Ext. belladonnæ	ij	"	12
Ung. sambuci	ʒj	" 4	
M			

Sig. To be applied frequently.

He states that he has had many cures with this ointment alone. Another excellent ointment recommended by this same authority, is:

℞ Plumb. acetatis	gr. x.		60
Zinci oxidi	gr. x.		60
Pulv. calaminæ	gr. xx.	1	20
Adipis benzoinat	ʒss.	16	
M			

An ointment of the oxid of mercury, 30 grains (gm. 1.80) to the ounce, has cured many cases.

In conclusion, I would emphasize the fact that in many cases anal fissure, when uncomplicated with some other rectal affection, is curable by means of non-operative methods of treatment.

1610 Arch Street.

A PLEA FOR THE PROPER TEACHING OF ANATOMY.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 6-8, 1894.

BY GEORGE FRANKLIN SHIELS, M.D., F.R.C.S.E.
SAN FRANCISCO, CAL.

The tripod upon which the whole superstructure of medical science stands is made up of anatomy, physiology and pathology. As it is well known to the student of natural philosophy that when one leg of a tripod is weak or is taken away, the mass which it helps to support either totters, or falling outside of its center of gravity topples and falls, so it is well known to the student of our science that when a knowledge of one of these important subjects is weak or lacking, the whole grasp of general medicine and surgery, no matter how acquired, is either insecure and shaky, or in the face of some slight emergency

trembles, totters and finally falls, carrying with it the reputation of the individual, who when he is dragged out from amidst the ruin is often held up as a laughing stock to his colleagues. If one leg of this tripod be more important than another it is assuredly anatomy, for without it no advance can be made in the study of its fellows. Hence I may state that to each and all of us a knowledge of anatomy is not only of the greatest importance, but is an absolute necessity.

No matter how a man may brace up his weak and tottering knowledge with props of polysyllabic eloquence, quotations from authors, tact in avoiding exposure of his lack of knowledge, flight to specialties which seem not to necessitate anatomic knowledge or with a laughing acknowledgment of once having known the subject and having forgotten it, on account of its being overshadowed by the more important practical branches of science,—no matter what means he may use, I state without hesitation that the time will come, if he live long enough, when his want of knowledge will make itself known either to himself or others by disastrous consequences to his patients, and a subjective sense of shame. For a superstructure no matter how beautiful, if it have an unsound foundation may indeed be likened to a house built upon sand.

If you agree with me in these views and I feel convinced that you do, then of a surety a plea for the proper teaching of anatomy, is one which will gain your hearty and willing support, and by strengthening my weakness with the expression of your opinions and honoring the subject with a free discussion, we may hope our plea will have an influence, perhaps small, but still an influence in directing the attention of schools toward a correction of existing conditions by awakening in them a desire to escape from the trammels of use and custom, and will lead to improved methods of instruction whereby a better and more useful knowledge of this great subject may be obtained.

Anatomy as taught in the past has been the bugbear of the student, the dreary, dry, uninteresting subject of the curriculum. Ask a student picked haphazard from his fellows: "What subject do you find most uninteresting?" In all probability his answer will be: "Anatomy." Go further; ask him which subject he fears most in his examinations, and he will again answer: "Anatomy." He looks upon it as a subject to be learned after the manner of a proposition of Euclid, and sits down with his Gray, proceeding to memorize the text, word for word, or if ingenious enough invents a means of memorizing by the aid of mnemonics, such as the following: "Salasap" for the branches of the axillary artery.

"Timothy doth vex all very nervous pupils," for the structures passing behind the internal lateral ligaments of the ankle joint.

"Oe, eighth pair," thoracic duct found there. Vena azygos by aorta stands. Lymphatic vessels and lymphatic glands," for the contents of the posterior mediastinum. Nerves, arteries, veins, muscles, become to him streaks of yellow, red, blue and brown color, formed into intricate diagrams to be memorized by constant conning over.

He attends lectures to find the same methods in vogue, and only too often does he discover that the teacher following the custom and for want of time, narrows down to a few complicated points of the subject which he, the student, learns to fear at the time of his examination since they crop up in the abominable form of catch questions.

And what about practical anatomy? It appears in syllabus that a candidate for a degree must have dissected the human body once. Curious, and taken by the novelty, the student buys a set of instruments, an apron, a pair of sleeves, and appears in the dissecting room ready for work; and what will he find? If my experience be correct and it extends to the schools of Germany, Austria, France, England, Scotland and America, he will find that his professor is rarely seen in the dissecting room. There may be a single demonstrator, or more rarely a staff of demonstrators, who are supposed to guide him in his work, and who as a rule confine themselves to demonstrations of special regions, such as the axilla, popliteal space, etc. He drearily drills through the necessary and specified single dissection and finally appears for examination stuffed full of answers to catch questions, and if he succeeds in passing the ordeal he thanks God, throws away his dissecting instruments and with a sigh of relief leaves anatomy forever behind. A few years later we find him as a practicing physician and surgeon, clothed in a white apron, his sleeves rolled up above his elbows, surrounded by all the appurtenances of modern aseptic surgery and ready to operate upon some poor unfortunate who like a lamb led to the slaughter little knows that the man in whom he has put his trust is ignorant of the very territory which he is about to invade. The operator follows one of two courses; he makes his primary incision, often based upon an erroneous diagnosis due to lack of knowledge, cuts some important vessel, the blood spurts, he is attacked by that condition of mind called "surgical delirium," puts a compress upon the wound, bandages it up and trusts that a clot may form by the time of the first dressing. Or what is worse he damns the mishap and proceeds on the cut-and-tie principle, the result of which is disastrous to the patient and the reward of which comes sooner or later to the operator, especially if he be possessed of a conscience.

Or mayhap our young graduate having an eye to business and seeing that the general profession is over-stocked, chooses what he believes to be a lucrative specialty, for example, the nose and throat. He buys the latest works on the subject, reads them assiduously and grows to believe that all the ills of mankind are centered in the organs, the diseases of which he supposes himself to know so well. A child comes to the office with enlarged tonsils, a guillotine is introduced, the tonsil is removed, but something else has occurred. The blood wells up from the wound by the teacupful, the child's face becomes blanched for the ascending pharyngeal or the internal carotid artery has been wounded. A surgeon is hurriedly sent for while the terrified and ignorant specialist stands by and watches his victim bleed to death. Had he known his anatomy how easy to have avoided this accident, or had it occurred, to have tied the common carotid artery and saved a life. I will not multiply examples—they are numerous and are known to you all. I plead for a proper teaching of anatomy—for a knowledge gained by training and not by cramming. Naturally I expect to be asked what I consider to be a proper method of teaching this subject, and by your courtesy I shall venture to briefly lay before you my ideas.

The teaching of anatomy must be systematic, must be begun at the commencement of the medical studies and continued until their end. The student must begin by learning the anatomy of the cell, and must be able to follow it through all its changes up to the formation of the most intricate tissues. To accomplish this it will be necessary to institute a distinct course of microscopic anatomy in which he will learn the beautiful wonders of the growth of tissue from that simplest anatomic element, the primeval cell. Next he should be taught development from the moment of impregnation to the time of birth. If these two branches of anatomy were carefully and systematically taught, the student would indeed be dull who did not have an active desire to pursue his studies further. Next he should attend a regular course of didactic lectures in which his teacher should aim to use the cadaver and actual preparations as much as possible, as by so doing he would teach the student to recognize the actual structures and not pictorial likenesses thereof. *Pari passu*, with this didactic course he should be taught practical anatomy, but before he is allowed to dissect he should be carefully taken over the bones of the skeleton, having each and every one of them thoroughly demonstrated to him, both from a mechanical and from a physiologic point of view, and in this way be able to understandingly view the skeleton, both in its integral parts and as a whole. He is now ready to enter the dissecting room where he should be made to dissect the body at least three times. His first dissection should be a topographical one, in which he should learn not only the individual parts, but the parts in relation to each other.

His second dissection should be a repetition of the first, with the addition that the teacher should constantly draw the student's attention to the importance of the various structures in their relation to the practice of surgery and medicine.

His third dissection should be one confined to medical and surgical anatomy, when he should perform all the surgical operations and learn to recognize all the tissues concerned therein, and during which he should be further taught the surface markings of all the important viscera. By such a course as this, I believe that the subject could be thoroughly mastered.

I would further suggest that the method of examination should be changed and that a series of examinations should be held, arranged in such a way that the teacher could be sure that his pupil had mastered what he had already gone over before he was allowed to proceed further. This would do away with cramming, would stimulate systematic work and would insure sound knowledge.

It is true that such a course as that which I have laid out would take time, but what of that? The day has passed when the intelligent teacher believes in the remotest degree that a two or a three years' course can be sufficient for a medical education, and the four years' curriculum is being rapidly introduced, while there are still many who like myself, believe that six years should be the minimum time of study for a medical degree.

In closing, let me affirm that no man who will follow out the course which I have here laid down will ever have reason to regret it.

If a surgeon, he will have that *sang froid* and confidence which is begotten of knowledge, that knowledge which is not to be obtained from books and lectures alone or in preponderance, but which is only acquired by long work in the dissecting room. He will not only know the position and relation of parts, but he will have the *tactus eruditis* which carries to the mind an appreciation of tissues and which Treves, so well names, "the anatomy of the individual." His dissections will have further trained him for his future operative work, for surgery is largely a handicraft. He will be self-possessed, cool, ready in any emergency, will know what he wants to do and will never suffer from "surgical panic," for he knows, and knowing fears not.

STRICTURE OF THE MALE URETHRA.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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Stricture is that condition where there is an abnormal diminution of the caliber of the canal, induced by pathologic changes in the mucous or submucous muscular walls of the urethra.

Strictures may be divided into inflammatory, true or organic stricture and false or spasmodic stricture, and divided according to their form into linear, annular, indurated, irregular or tortuous strictures. Some surgical authorities make another division according to the condition that exists; for instance when the stricture bleeds easily by use of instruments or becomes inflamed it is called an irritable stricture. Then again they may be divided into small caliber, which will admit only of the smallest size sounds, less in circumference than fifteen millimeters, and of a large caliber, or strictures that will take instruments from that size upward.

A spasmodic stricture is that condition where there is muscular spasm and the normal caliber of the urethra is diminished.

It is a question which all surgical authorities have not fully agreed upon, whether spasm of the urethra takes place without the presence of some organic constriction of prior existence. Sir B. Brodie says: "That a spasmodic stricture may exist independently of any actual organic disease. At the same time it must be acknowledged that the existence of a purely spasmodic stricture is of rare occurrence."

John Hunter states: "There are often spasmodic contractions of these muscular fibers in different parts of the canal, shutting up the passage and obstructing the course of the canal, and often not allowing a drop to pass."

I think it has been proved beyond a doubt that the whole urethra has contractile action, and with a sphincteric muscle which acts especially on one part of it may cause temporary constriction. I will briefly mention the chief causes of spasmodic stricture. Where an organic stricture already exists, this spasmodic constriction may be caused by extreme acidity and irritating effects of the urine. Turpentine, cantharides, spices have the same effects. Hemorrhoids, rectal fistulæ and operations about the anus are frequently followed by retention from spasmodic contractions of the muscle. Strong mental emotions will interfere sometimes with micturition.

ETIOLOGY OF STRICTURE OF THE MALE URETHRA.

I believe that the majority of surgeons agree with Sir Astley Cooper, who says: "That in ninety-nine cases out of every hundred it was the result of an attack of gonorrhea."

Civiale says: "That gonorrhea might be placed in the first rank of the list of causes of stricture. He then asserts that this affection may never have been acute, but chronic at its commencement, and not necessarily following impure or even indeed any sexual connection."

He enumerates other and less obvious causes, such as abuse of instruments employed in affections of the urethra, perineal section and abuse of coitus and prolonged erections.

Sir Henry Thompson gives the analysis of 202 cases of the stricture of the urethra. Of this number 81 per cent. was caused by gonorrheal inflammation; 14 per cent. due to injuries of the perineum; four cases due to cicatrization of chancres, and six cases to congenital origin.

Dr. Otis gives the record of 85 cases of stricture, representing 147 distinct strictures of the urethra:

75 or 88.23 per cent. were due to gonorrhea
5 or 5.88 per cent. were due to masturbation
3 or 3.53 per cent. were due to lithiasis
2 or 2.35 per cent. were due to traumatic.

My experience is where an attack of gonorrhea has existed for some time, it is more apt to cause stricture than a slight attack of but brief duration.

Any injuries to the perineum from a fall or a blow may cause stricture.

The use of strong injections, a sudden rupture of the walls of the urethra during an attack of chordee might result in causing a stricture, or rough and awkward use of sounds and catheters. The location of a stricture of the urethra varies extensively, but I think most authorities agree in finding it most frequently in the subpubic curvature which occupies an inch of the urethra before, and three-quarters of an inch posteriorly, which includes all of the membranous portion. The next place in frequency is about two inches and a half of the first portion of the urethra. The seat of the third most frequent location is about two inches and a half to three inches of the center of the spongy portion of the urethra, or within two inches and a half of the external meatus.

According to the eminent authority of Sir Henry Thompson who made a careful examination of over three hundred preparations of strictures contained in the museums of Paris, London and Edinburgh, he found that out of 320 distinct strictures, 216 cases, or 67 per cent., in the subpubic curvature; 51 cases, or 16 per cent., in the center of the spongy portion; 54 cases, or 17 per cent., at the external meatus, including a distance of two inches and a half behind it.

Stricture in the prostatic portions is extremely rare unless there exists hypertrophy of the prostate gland.

Symptomatology.—The first symptoms that usually causes a patient to consult a surgeon for treatment of stricture is a slight gleety discharge.

Some irritation is felt or slight smarting sensation in the tract of the urethra during the act of micturition; there is a more frequent desire than in the normal condition to urinate. The stream is smaller than usual and presents a twisted, forked or divided appearance.

In the majority of cases there will be found a purulent secretion from the urethra, which may present a yellowish or transparent appearance. In some cases the first symptom the patient has of stricture is a complete retention of urine, the stricture having existed for some time, but after a debauch or over indulgence in eating and sudden exposure to cold, retention of urine develops.

There are marked chemic changes in the urine if the disease is of a chronic character and has not been treated or relieved. The urine becomes almost opaque, and gives a distinct ammoniacal odor and leaves a sediment of mucus and pus, which is of a tenacious character and adheres to the bottom and sides of the vessel. The urine becomes alkalin.

Hematuria is a rare symptom of stricture. In addition to the local symptoms of stricture there are some constitutional disturbances.

The patient presents an anemic appearance, suffers from dyspepsia and becomes irritable and complains of pains in the back and loins. Has chilly sensations, followed by perspiration.

PATHOLOGY OF STRICTURE.

The pathology of stricture of the urethra is that of a simple inflammation which may affect the epithelial and submucous basement membrane of the urethra, and at the same time the corpus spongiosum may be involved. Where the stricture is slight the urethra anterior to the constricted portion is normal; but in severe and chronic cases where the anterior portion of the urethra becomes affected it is contracted.

The urethra posterior to the stricture is almost always dilated, which dilatation is caused by the obstruction to micturition. There is a loss of elasticity in the urethra, and it becomes so enlarged as to easily admit the finger; pouches may form and appear as fluctuating tumors in the perineum.

The gleety discharge, as a rule, comes from behind the stricture where the mucous membrane is in a state of chronic inflammation. The walls of the urethra may become ulcerated with abscesses and fistulæ. The walls of the bladder are hypertrophied, caused by interference with the flow of urine.

The ureters and kidneys are affected. The ureters become dilated; the pelvis and infundibula and calices of the kidneys are distended, while the medullary structure of the organ undergoes atrophy. Not infrequently the penis becomes hypertrophied, especially where the stricture is of long duration.

DIAGNOSIS.

The symptoms I have already mentioned might be considered sufficient to diagnose stricture, yet there are other diseases of the urinary organs that have symptoms so similar to those of stricture that they might be mistaken for it. Inflammation of the prostate gland of a subacute character, and neuralgia of the urethra and hyperesthesia may have all the symptoms that I have described as having occurred in stricture. The safest method of diagnosing stricture is to make a careful and thorough exploration of the urethra with instruments. The instruments necessary for a physical examination of the urethra and to determine the presence of a stricture are a complete set of sounds, solid and flexible bougies and catheters.

I know of no better instruments than the bulbous bougies for exploring the urethra for stricture.

Dick's elastic or gum bougie, and the oral tipped wire bougies of Otis are invaluable.

I prefer to use flexible bougies for exploring the urethra for a stricture. I find them easier to introduce, and they certainly cause less irritation and pain than metallic sounds. The chief kinds of non-metallic flexible instruments are English gum elastic catheters; the most common of solid instruments are the sounds or bougies and the ordinary catheter.

In order to ascertain whether a stricture exists, the number and character of the obstruction and what portion of the canal is affected, I would recommend the introduction of a No. 9 or 10 acorn or bulbous pointed bougie. I have observed that I can detect a slight stricture better on the withdrawal than on the introduction of the sound, since the abrupt shoulder of the bulb impinges more decidedly against it. A graduated bougie can be used in order to ascertain how far the stricture is from the external meatus.

Having found a stricture and its location by exploration, it is important to know its caliber. This can be judged of pretty accurately by the size of the stream; the caliber of the passage is a little less than the volume of the stream. The urethrometer is an instrument by which we can obtain an accurate measure of the urethra in its normal condition.

Dr. Otis contends that there is a relative proportion existing between the caliber of the urethra, and the size of the penis. For example, when the flaccid penis about three-fourths of an inch back of the corona glandis measures three inches in circumference, the size of the urethra is thirty millimeters in circumference or more.

THE TREATMENT OF STRICTURE OF THE URETHRA.

The treatment of organic stricture of the urethra varies according to the type we find in the canal. It is one of the most difficult problems in urinary surgery to make a fixed rule as to the selection of the best mode of treatment in the different types of stricture.

Dilatation is one of the safest and mildest modes of treatment of stricture for the urethra. It is a method more frequently used by surgeons than any other form of treatment, having been employed in the time of Galen and used extensively up to the present time. It can be accomplished slowly by the introduction of sounds and bougies.

This method of treatment may be continuous dilatation or interrupted. Before the introduction of bougies and sounds in the urethra they should be thoroughly sterilized by heat or carbolic acid or by friction with a clean towel. The instrument before introduction should be warmed to the temperature of the body, oiled with 1 to 40 carbolized oil. In order to obtain local anesthesia, hydrochlorate of cocain as suggested by Dr. Kohler can be used. Can inject about half a drachm of a 4 per cent. solution of cocain into the urethra. An ordinary hypodermic syringe may be used, at the end of which I attach Otis' cocain tube. Local anesthesia is produced within five minutes.

In several cases where I have used injection of cocain in the urethra for local anesthesia I have observed alarming symptoms of toxic effects, accompanied by delirium and tetanic fixation of the muscles of respiration.

Stimulants with hypodermatic injection of strychnia and chloral by enema give the best results in correction of this condition.

In the treatment of a simple case of stricture of the urethra by gradual dilatation, I prefer to use a flexible bougie as large as the stricture will comfortably admit; after it is passed I withdraw it at once, however, there is a great difference of opinion among surgeons as to whether the bougie should be withdrawn at once or allowed to remain in the urethra for ten minutes to half an hour.

The operation may be repeated on the third day, introducing the same sized bougie first, and the next size larger, and so on increasing the size until the stricture is dilated to the caliber corresponding with that of the external meatus. It is important to instruct the patient how to pass the instrument on himself, as the treatment should be continued for several years. Should pass the bougie at least once a week, increasing the interval to once a month.

When a stricture is located more than four inches from the meatus there is no treatment as safe and none that will give better results than gradual dilatation. A quicker method of dilatation than the one I have just described is known as "continuous dilatation." A catheter or one or more whalebone filiform bougies may be inserted in the urethra and retained not longer than forty-eight hours. Within twenty-four or forty-eight hours suppuration takes place; a purulent discharge comes from the constricted portion of the urethra, and the canal is rapidly enlarged.

Other instruments may be passed as in gradual dilatation until the normal diameter of the urethra is obtained.

Many reasons have been given as the *rationâle* of dilatation, but the one now agreed upon by the majority of surgical authorities, is that, "so far as it effects any permanent good results it acts by promoting absorption."

Now the first or immediate improvement must clearly have been due to the mechanical action of the dilating body on the stricture.

According to the authority of Sir Henry Thompson most kinds of strictures contain two structural elements, physiologically considered, or one element in two different degrees of development—the one absorbable; the other non-absorbable. The former is supposed to be removable by the act of dilatation; the other not so, but only amenable to mechanical distension, the effects of which are temporary. The relative proportion, then, of these two elements determine the degree of success which dilatation is capable of accomplishing in the urethra.

The operation for the relief of stricture by internal urethrotomy is performed with an instrument known as the urethrotome.

The instruments in use are of many different kinds. The one most frequently used is that of Maisonneuve, which has been modified by different makers at the suggestion of different surgeons. His instrument consists simply "of a grooved staff, which need not exceed No. 7 French catheter scale, provided at its extremity with a screw point, to which is attached a filiform bougie. The blades intended to slide in the grooves and to divide the stricture, are triangular in shape, sharpened before and behind, but blunt at the apex, so that it may pass over the sound urethra without wounding it."

Civiale's urethrotome was a very popular instru-

ment, and is highly recommended by Sir Henry Thompson. At the end of the shaft of this instrument is a bulb, in which the blade is concealed equaling about No. 16 or 17 American scale. It cuts from behind forward. The instrument can not be introduced until the stricture is dilated sufficiently to admit No. 16, which is a great objection to the use of this urethrotome.

Prof. Otis has invented several dilating urethrotomes, known by instrument makers as Nos. 1, 2, 3 and 4. These instruments consist of a pair of steel shafts connected together by short pivotal bars, on the plan of an ordinary parallel ruler. They are separated by means of a screw at the handle, near which is a dial indicating the extent of their divergence. The upper bar of the instrument is traversed by a urethrotome, terminating in a thin, narrow spring blade, which when at the extremity of the groove in which it runs, is concealed in a slot.

The instrument and its contained urethrotome, having been passed down behind the site of the stricture, and dilated until the stricture is made tense, the handle of the urethrotome is withdrawn, causing the blade to rise from the depression in which it was concealed, and the stricture is divided upon its upper wall from behind forward.

This instrument is to be preferred in strictures of large caliber; it is easily introduced and has great strength. Other advantages it has, that it attacks a stretched instead of a flaccid stricture. The incisions are made at a pre-arranged place, extent and depth.

Prof. Otis reports 2,297 operations of dilating urethrotomy without a death or permanent disability of any sort. He contends that re-contraction of the stricture after the operation is rare.

There is but little risk of hemorrhage after the operation of internal urethrotomy; if hemorrhage should occur from the pendulous portion of the urethra, it may be stopped by placing the penis upon the belly, "laying a handful of cotton over the organ and strapping it down with a bandage carried around the pelvis."

The patient should remain in bed for several days and be kept perfectly quiet. Sounds and bougies should be introduced for some time after the operation of urethrotomy, until the urethra is dilated to its normal size.

The operation of urethrotomy is not always a success; a recurrence may follow, especially if the stricture has existed for a long time and is greatly indurated. If the stricture should recur after having performed internal urethrotomy I would advise gradual dilatation.

Strictures at and around the meatus are best operated upon by a blunt pointed tenotome which gives the surgeon greater accuracy in making his cut than by the old method of dividing the stricture by Civiale's concealed bistoury.

In a small percentage of strictures there will be found cases where on account of the tightness of the stricture it will be impossible to introduce the urethrotome until the stricture is dilated sufficiently to pass the instrument. In cases of this kind, dilatation can be done efficiently with Banks' dilating filiform bougies, known as immediate dilatation, or it can be accomplished by the method I have just described, continuous dilatation.

When dilatation has been sufficiently made, the urethrotome can be passed and the stricture cut. Strictures located near the external meatus may be cut with but little risk and give the best results. Strictures within three inches of the external meatus re-contract so quickly and the surrounding tissues are so unyielding that the operation by the urethrotome is the best mode of treatment.

In some cases of stricture the constriction is so great that it is impossible to pass any instrument, and at the same time it may be complicated with infiltration or retention of urine or abscess. The operation of external perineal urethrotomy should be performed at once in order to save the life of the patient. The stricture at the time that the operation is decided upon may be found in one of three degrees of constriction:

1. The stricture may be opened sufficiently to introduce a grooved sound, which will act as a guide when the knife is passed through the perineum in its division of the obstruction. The operation thus performed is known as external perineal urethrotomy with a guide.

2. When it is impossible to pass the stricture through the normal canal, we may succeed by introducing a grooved staff which terminates with a button-like end until it reaches the obstruction, then perform the usual perineal incision and open the urethra about a quarter of an inch in front of the stricture. The anterior face of the stricture is shown and the proximal orifice is discovered through which a fine probe can be passed, and afterwards a grooved staff upon which a free division of the constricted tissue can be made. When the operation is complete pass a catheter, which is to be retained for three or four days. This method is known as "Wheelhouse's operation."

As a last resort and when unsuccessful by the above methods of treatment open the urethra behind the stricture, at the apex of the prostate gland, known as "Cook's operation."

Resection of the urethra as a radical measure in the relief of severe forms of deep urethral stricture due to injuries, has been done successfully during the past year, chiefly by French surgeons.

Guyon, of Paris, advocates partial resection of the perineal urethra in preference to total resection, especially where the cicatrices involve only the floor of the urethra. If complete resection of the urethra be performed the elasticity of the surrounding tissues produces greater retraction between the resected edges of the urethra than could otherwise take place. Slight resection, the after cicatricial contraction in connection with the floor of the urethra, the roof not being disturbed, tends to increase rather than to diminish the caliber of the urethra at that point. Albarran has operated five times by partial resection of the urethra. All of his operations were successful, and cured in from two to three weeks. He contends that it is more difficult to get union by first intention in a case of stricture due to gonorrhea than of traumatic origin, as when of gonorrheal origin there is always a chance of infection and subsequent suppuration.

Herteloupe, of Paris, reports eleven cases of successful resection of the urethra. He does not advocate this operation when the stricture is of gonorrheal origin.

Blank Applications for membership in the ASSOCIATION at the JOURNAL office.

ON THE LIMITATIONS OF SURGERY IN THE TREATMENT OF THE NEUROSES.

Read before the Michigan State Medical Society, May, 1891.

BY DAVID INGLIS, M.D.
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A hardy young Englishman who had followed the hounds, fallen from his horse, wrestled, boxed and enjoyed the varied experiences of an out-of-door life takes to sedentary life, hard study with little or no recreation, and having thus changed his mode of life, slips one winter morning on his own doorstep, bumps down the five successive steps on his buttocks—considers the incident simply as rather undignified and amusing, goes down town and, a few hours later, has to be assisted to his home, where he takes to his bed. He becomes paralyzed in both legs, has enormous exaggeration of the reflexes, takes to tears or laughter, elation or depression on trivial provocation, fears yet longs for his doctor's daily visits, perspires, grows cold or flushes, becomes faint, his heart palpitates, he is harassed by insomnia; in short, presents the typical symptoms of railway spine and brain and is confined to his bed and room for many months. Finally his paraplegia passes off completely but three years after returning to the pleasant rural life of his old English home, he writes that he is still incompetent to engage actively in responsible mental labor. He has every inducement to work, for he needs money and he is not kept from trying to work by any expectation of damages to be obtained from any corporation, for he fell on his own doorstep. Here is a pure case of neurasthenia which can fairly be termed traumatic.

But notice that when he used to get a fall while fox hunting no such symptoms followed. There was another cause acting quietly before the injury. A change in the nutrition of his entire nervous system, probably largely due to the great change in his life from an active and out-of-door one to a sedentary and studious one.

A woman of good Christian character, of much good sense, a good wife and mother, who had actively spent her energies in house and church work, is now approaching the menopause, and has the misfortune to entertain, as the family guest, for several days, a fanatic revivalist preacher. He labors with constant prayers and endless assiduity to convince her of the fact that because she had grown quietly into the Christian graces and not experienced any emotional storm, her soul is therefore in jeopardy. So successful is he that he leaves behind him a ruined home, the hostess becomes insane, is removed to the asylum where she remains until her death.

Shall we lay all the blame on the guest?

Great as is our indignation, truth compels us to acknowledge that here again there must have been a cause acting slowly and quietly, which prepared the poor woman for the catastrophe inflicted by the unwise visitor. If it were not so, then this man's track through the world would be like that of a pestilence, for what he preached to her he preached to other women and men.

Several children playing together are suddenly scattered in affright by an immense dog. One of them in a few hours develops chorea. She is tormented for weeks by involuntary muscular movements of almost every muscle, but quite as marked is the change in her intellectual and emotional state. Study is impossible; she becomes so irritable as to render it a burden to her family to live with her; the general bodily nutrition begins to fail and for years to come her life must be adjusted to a different scale.

Why were the other children not so affected?

Because this child's whole nervous organization had been adjusted on a more unstable basis than theirs—this may have been brought about either by defective hereditary endowment, by wrong physical and mental training, or by some antecedent disease or acquired diathesis, but that it was so seems certain. In almost every similar case it can be easily demonstrated. You ask what is the bearing of such common cases upon the matter of surgical treatment of the neuroses? Simply this:

As surely as the various neuroses depend mainly and finally upon general and wide-spread defect in the nutrition of the cerebro-spinal axis, just so surely will the correction by surgical measures of local and secondary causes fail to permanently cure the various neuroses. But just in proportion as any neurosis depends mainly or primarily upon local causes, in that proportion can we hope for help from the removal of the cause.

This last statement needs to be modified, however. Nothing is more certain than that the entire functional life of the nervous system contemplates the establishment of habits. Our whole educational effort can be summed up in one idea: We are trying to establish habits. The violinist has made no progress until his fingers come down on the strings automatically or by habit. The student of books is forming habits—training his mind to follow certain sequences of ideas as a habit, to recognize certain relationships easily or habitually. It matters not how the action is set up, it becomes habitual if continued for a time. I knew an epilepsy set up by the irritation of some late coming and abnormally located teeth. When the abnormality was discovered and removed it was too late; the epileptic habit had been set up and the disease went on unchecked.

So the neuroses which depend mainly or primarily upon local causes are not all capable of being cured by the removal of the cause. Here, then, is a further limitation of the possibilities of surgery. Surgical cures would be more frequent than they are, if surgical efforts were resorted to much earlier than they commonly are.

It is clear, then, that the question of the possibility of surgical help in the neuroses is largely bound up in this: In any given case how important a part in the causation is played by general causes? If local causes are largely to blame, the further question is, How long has the cause been acting?

It has been one of the triumphs of the science of medicine that we have learned to give careful attention to the phenomena of reflex irritation—the fact of an irritation at one point causing a train of symptoms at some remote point of the body, has been known to the profession since ancient times, but it is only in the last few years that we have begun to comprehend how widely these relations extend, and how frequently this relation of cause and effect can be traced.

Probably nothing has done more to advance positive therapeutics than this one discovery. The recognition of the relation of various defects in the eyes to certain neuroses is a case in point. Migraine was, in former years, a stumbling block in the way of the profession. As a rule, the sufferer from sick headache, after trying several physicians in vain, settled down to a life of periodical wretchedness and the physician was no longer regarded.

To-day a large percentage of cases of migraine can be cured by careful correction of ocular defects. It is a great triumph.

Our gynecologic associates were not slow to recognize the bearing of this phenomenon upon their line of work, and to-day the gynecologist can bring forward illustrations, without number, of distant neuroses cured promptly and completely by the proper treatment of some pelvic disorder. That, too, is a great triumph—I would not attempt to lessen it—rather would I urge that the profession in general

should be more diligent in searching for these cases of reflex irritation. There is not a gynecologist before me who can not tell of instances in which it was the gynecologist who first traced the relationship of some nervous disorder to some pelvic error, and that, too, in patients who had been a long time in the hands of one or more general practitioners.

There is not an ophthalmologist who can not confirm this from his experience, and the neurologist sees daily that there is much need yet of a fuller recognition of the part played by reflex irritants. These things are true.

Now it has happened that men have been carried away from sound judgment by their zeal for truth. Certain ophthalmologists have been so impressed with the facts of reflex irritation that they have made impossible claims for the cure of diabetes, locomotor ataxia and other diseases, by means of proper adjustment of the eye muscles. Fortunately, the over-zealous ophthalmologist has been content to leave the eye in the socket, and the worst that has come to the patient has been a series of useless tenotomies.

It has been otherwise with the gynecologist. He, too, has been strongly impressed with the facts of reflex irritation. He has seen women whose lives had been reduced to utter uselessness, to whom existence was a curse, suddenly restored to a happy and useful life by the correction of some pelvic disorder. It is small wonder that he has become thoroughly enthusiastic in his zeal to search out and remove sources of reflex irritation. Still more; he may well have grown weary and dissatisfied with the endless round of applications to the mucous membrane of the genital tract—the tampons and pessaries and douches, and have felt that gynecology must find its glory in some measures which bring more definite and lasting results than these things do—and we all feel just as he does, but the gynecologist is mortal; he belongs to the great gregarious family of man and sometimes his zeal runs away with his judgment.

So it comes about that we are living, in these days, in an era of laparotomies. Unlike the ophthalmologist who still leaves the eye in the socket, the tendency of present day gynecology is to extirpate the genital apparatus, root and branch. I stand here to-day, not to condemn gynecology, but to call for careful judgment.

Let us give to the surgical gynecologist all due honor, there still remain these limitations: First and above all, the greater number of neuroses by far are primarily dependent upon general conditions of the nervous system. This holds true of very many cases in which an evident local cause can be traced as well. This is a fact of prime importance, and can not be too clearly emphasized nor too often reiterated. In the very large class of neuroses in which no evident local defect can be found, even the most enthusiastic operator is quite content to let the patient alone. The real battle ground is in the cases in which some local defect can be discovered.

Here the tendency of the surgeon is constantly and strongly to urge operation. The local defect occupies so large a part of the field of vision as to hide from view those general conditions which are the real and permanent causes of the neuroses. I am confident, from a constantly widening experience, that were surgeons to bring to their work that habit of mind which is fostered by the practice of general medicine, the habit of taking a comprehensive view of the patient's whole status and previous environment, the surgical treatment of the neuroses would be attempted far less often than is now the case, and gynecology would be spared the condemnation which has been brought upon it by some of its members.

The needless castration of a woman is a permanent wrong to her. It is not to be cast aside as a light matter, for a woman's whole life is changed. It is not simply a question of the sexual life, although to shut a young woman off from the happiness of wife and mother is a most serious thing. The change is more profound, for the whole mental state is in many cases altered. The mental change is of all grades, from a simple lowering of the intellectual activity to the development of pronounced forms of insanity. Women become queer, cranky, unhappy, irascible. The beauty of life has gone; they continue to exist. Some die from the operation—it is a hard thing if it be that the patient might have been restored without operation. There is need of more careful judgment. Again, I am equally confident that were surgeons to keep track of the subsequent histories of their cases, for long periods, operations would not be done as often as now. It is not a sufficient answer to say that the patients recovered *from the operations*. The question at issue is, Did they recover from their neuroses? This question can not be answered by stating the condition of the patient a few weeks or months after the operation. The evidence is overwhelming that the mere fact of operation, in many cases, exerts a remarkable effect upon the patient for a time. This effect of operation occurs when the operation has been a failure, or when it has been performed for various other reasons than the removal of points of reflex irritation. The question is this, How many operations performed for the purpose of removing supposed causes of neuroses accomplish the object aimed at? Let our laparotomists keep records of all laparotomies done for such purposes, for two years after operation, and give us the results. It will result thus: A proportion of beautiful cures, another considerable number of cases in which there is striking temporary improvement and subsequent relapse, another group of cases in which the removal of the generative organs has taken away all hope and left that most wretched of all patients, a neurotic woman confirmed in her despair. All of these patients, with the exception of the first group, come to the neurologist, and in each he recognizes that the operation has not touched the real difficulty; that the same problem in therapeusis presents itself after the operation as before. The limitation of surgery is evident; it can not reach the functional soundness or unsoundness of the nervous centers.

A further limitation of surgery is found in the difficulty of diagnosis. It would seem that an irritated and painful ovary could be easily diagnosticated. Yes, the patient can tell that herself. The problem for the surgeon, however, is not so simple. Is this painful and tender ovary the cause of some profound neurosis, or is it a consequence of it? You see the question is a vital one.

I have in mind a beautiful girl of 19 years, who developed a most remarkable series of convulsions, which for a long time seemed to endanger, not only her mental health but life itself. There was in this case an ovary exquisitely tender, the seat of pains of great intensity. The other ovary finally participated in

the same condition. To resist the pressure for removal of these ovaries was the most trying task; the mother, the girl's relatives and friends besieged me in person and by letter to cease wasting valuable time, and let her ovaries be removed.

But always in my mind was this problem: If I have them removed, what then? Knowing the girl's life history and her inheritance, I said to myself, I will have to make the same fight to restore her nervous system to stable equilibrium, ovaries or no ovaries. The girl has still her ovaries, she is a well, happy woman, she has a future before her as wife and mother, and now comes the remarkable fact that, just in proportion as the general nervous upbuilding went forward so the local pain in the ovaries ceased —ceased not because the generative apparatus was treated but, as I believe, because it was carefully let alone. The pains in the ovaries were no more a guide to operation there than neuralgia of the face, occipital or intercostal nerves would have been; they were a *result* of her nervous condition, not the cause of it. No!

Surgery is limited by the difficulty of diagnosis, the difficulty of deciding upon the real significance of some local symptom.

Surgical treatment of the neuroses is further limited by the fact that surgical operations are themselves the cause of severe neuroses; sometimes lead to worse conditions than the one sought to be cured. The statement has been made that "10 per cent. of the castrations for uterine fibroids bring on insanity." This is undoubtedly an exaggeration, but there is no question whatever that there is a basis of fact in it; many observers have put on record cases of insanity caused by operation. I have spoken thus of the limitations of surgery in the treatment of the neuroses, because it seems to me that the same fundamental principles apply in all the neuroses. The subject more particularly before us this morning has been the gynecologic treatment of the insane, but insanity is in most of its forms a neurosis.

I heartily coincide with the proposition now receiving more and more acceptance, that every asylum should have an attending or consulting gynecologist, and that he should actively study the patients. So, too, the insane at home should be carefully studied on this line.

One of the most valuable papers ever brought to my notice, was one by Dr. Holmes, of Chatham, Ontario, upon the relation of puerperal mania to uterine disorders — particularly subinvolution — and every year's experience has taught me to look more closely for subinvolution or some uterine or ovarian lesion in cases of mania or melancholia occurring after childbirth. And these cases emphasize very clearly the fact that the earlier the local error is corrected, the greater the hope of curative results.

The limitations of surgery in the treatment of the insane, are the same as those which I have already mentioned, but with one added limitation. Much of the benefit of surgical operations upon the neurotic depends upon the effect of expectant attention. This element is apt to be largely lacking in the insane. On the other hand, surgery in the insane is free from one of the usual limitations. I refer to the patient being worse off after the operation than before. Herein the surgeon has a more free field than in the other neuroses.

In conclusion, I venture the suggestion that the search for removable causes of the insane neurosis ought not to be confined to the female inmates of our asylums, and ought not to be carried on exclusively by gynecologists. There are more males insane than females. There are probably as many insane patients with atrophied testicles and varicoceles, as with hardened ovaries or congested uteri. Hemorrhoids can cause the same reflex neuroses as lacerated cervices, but when all is done that can be done locally, the population of our asylums will not be materially reduced, for the great facts of defective heredity, of wretched mental culture, of high pressure living, of immoral life and of early or late old age will still remain, as they are now, the causes of insanity, as they are of most of the other neuroses.

SELECTIONS.

Ligation of the Base of the Broad Ligaments per Vaginam Including the Uterine Arteries for Fibroids of the Uterus.—Dr. Augustin H. Goelet, of New York, in a contribution to the *American Medico-Surgical Bulletin*, June 1, reports favorably upon this operation in his hands for the control of uterine hemorrhage and reduction of fibroid growths. He believes it should be done in lieu of hysterectomy when that operation would involve too great a risk, and as a preliminary step with a view of avoiding the necessity of the more hazardous operation. When extensive attachments have been formed which would afford additional nutrition, considerable reduction has resulted even in growths of large size.

When the operation has been done for smaller growths the result has been more satisfactory. In some instances complete atrophy has been reported. This result, as well as arrest of the uterine hemorrhage, is accounted for by interference with the blood supply and nerve supply which are included by ligation of the base of the broad ligaments. It is estimated that the uterine arteries furnish the uterus with two-thirds of its blood supply, and it is reasonable to expect that a profound effect will be produced upon that organ and growths arising from the walls if this is suddenly cut of.

The sole danger in the operation is the risk of including the ureters in the ligature, as they pass down behind the uterine arteries only half an inch from the cervix and are consequently in the field of operation. Dr. Goelet suggests as a preliminary step, to eliminate this risk, that bougies be passed into the ureters through the bladder. He admits, however, that a careful operator accustomed to working in this region may easily avoid the ureters.

The technique of the operation as described by Dr. Goelet shows an important departure from the usual method followed. Instead of ligating each artery in only one place, on a level with the internal os, he applies a second and often a third ligature to the artery on each side as it ascends along the side of the uterus, the result of which is to cut off the compensating blood supply from the ovarian artery to the lower part of the uterus.

Dr. Goelet gives all the credit of priority to Dr. Martin, of Chicago, who has recently suggested and popularized the operation and perfected its technique, but states that he first ligated the uterine artery per vaginam on one side in January, 1889, in the case of a large fibroid the size of a seven months' pregnancy with a view of diminishing the size of the growth by reducing the blood supply. The artery on the other side was not ligated because the position of the tumor made it inaccessible. Six months later the tumor was one-third smaller, and was giving no inconvenience.

He quoted his last case operated upon, to show how promptly uterine hemorrhage may be controlled by this operation.

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SATURDAY, JULY 21, 1894.

ABOUT FOOT WEAR.

"How beautiful are thy feet, with shoes, O! Prince's daughter," says the Song of Solomon, and it must be confessed as a fact true of our time that modern feet must be hidden by shoes to give an approach in appearance to a perfect classic standard. Toes twisted out of shape, thick projections at points of contact, clubbed nails, corns in various uncanny situations, and bunions on the joints, make the actual foot so far from being a thing of beauty that it is only to be viewed in private and then by the chiropodist.

The shoemaker, jolly follower of King Crispin that he is, desires to make "handsome" shoes, and they are usually quite unlike the natural form of the foot, which long having been "cribbed, coffined and confined," becomes deformed for life.

We venture to say that the surgeon of experience, familiar as he is with the anatomy, if not with classical models, can scarcely recall an example of a foot perfect in all its parts, and these blemishes or deformities are nearly always acquired. The shoe pinches, it is too narrow, too long, too short, too wide, too heavy, too thin, or too much varnished, but Crispin made it, he has been paid and the shoe must be worn at all hazards. And thus the children's feet are ruined.

Looking at the matter from a purely hygienic standpoint, the Indian moccasin is infinitely superior, for indoor wear, to the stiff soled, unyielding shoes of our times.

The varnished or "patent leather" shoe is surely an invention of the devil. In any case while there remains a semblance of circulation in the foot, there will be some perspiration, and however slight the quantity or however great the amount, it remains in contact with the skin, for the shoe leather has been made impervious to moisture. The skin is thus macerated, and excoriated by being "stewed in its own juice." It is readily seen that when in addition to the unnatural form common to most shoes, we add the hermetic seal of the patent varnish, we are not so very far beyond the Chinese civilization. Even that curious people limit the foot-deforming process to one sex, the female. We allow our shoemakers to deform all feet alike; we spare neither childhood, maturity, nor old age. All suffer alike. The male Chinaman has a wooden sole shoe with a cloth upper. It is well ventilated and serviceable, perhaps better adapted to the city foot-pavements than the moccasin, and for hot weather it seems greatly superior to the ordinary European shoe.

Common sense should teach us that living in a climate subject to such extreme variations of temperature as our own, we should adapt our style of dress, including foot-wear, to the season. A desire for cleanliness is a valid reason for not using the ancient sandal during the heats of summer; doubtless the desire to conceal deformity is equally potent, but the adoption of the Chinese shoe for outdoor walking during summer, and the moccasin for indoors, would be a great relief to suffering feet.

In winter we might use heavier soles and thicker leather when outdoors, but changes should correspond to the temperature as much as practicable. The tyrant CALIGULA permitted the Romans to wear slippers in the theater, and he himself often wore them in public. It is interesting to recall that this Emperor CALIGULA was so named on account of the soldiers' shoes. The shoe (*caliga*) of the Roman soldier was heavily set with nails. The word "*caligatus*," a private soldier, refers to the foot-gear, and SENECA, speaking of MARIUS, refers to him as "*a caliga ad consulatum perductus;*" that is to say, "led from a private to the consulship."

We have neither time nor space to take up the interesting historical question of the evolution of the modern deforming shoe from the natural skin foot coverings of the people of ancient Latium. It was many centuries before tanned leather came into use in the Italian colony, but wooden shoes were kindly put upon prisoners condemned for parricide, and the very poor wore them then, as now, from necessity.

In conclusion, we assert that reform is necessary to secure sound, healthy and well-shaped feet, and that the nature of the material of which shoes are made is of the highest hygienic importance.

WHAT WAS THE LISBON EPIDEMIC?

In April of the present year, following upon a season of drenching rains, a disease suddenly broke out in the city of Lisbon characterized by all the symptoms—with one exception, to be hereafter noted—of Asiatic cholera. Competent observers described the attack as setting in, without premonitory symptoms of illness, with sudden discomfort, vertigo,

muscular debility, headache and abdominal disturbance; followed quickly by vomiting, profuse mucous and sometimes rice-water diarrhea, sunken eyes, whispering voice, dry tongue, burning thirst, cramps, algidity and cyanosis—"a few hours sufficing for the development of all these symptoms in a person who was before in perfect health." Add to this that the disease was contagious—washerwomen, for example, being infected from the soiled linen of patients; and transportable—one suffering from the disease conveying it to the man in whose house he took refuge twenty miles (thirty kilometers) from the city; and, finally, that "the anatomic lesions characteristic of Asiatic cholera were present." It is little wonder that DR. FEDERICO MONTALDO, sent by the Spanish Government to investigate the epidemic, unhesitatingly pronounced it to be Asiatic cholera or that a quarantine of cholera was thereupon established against the city and province.

The single exception to the ensemble of Asiatic cholera above depicted was that of mortality. It is indefinitely stated that "several thousand persons were attacked within a few weeks;" yet there "were hardly any fatal cases, for among all those affected only a *single death* was attributable clearly to this singular type of cholera."

What, then, was the Lisbon epidemic of 1894?

DR. A. CHANTMESSE, Assistant Inspector General of the Sanitary Service in Paris, has just made public the results of his investigations of a comma bacillus isolated by DR. CAMERA PESTANA, Director of the Bacteriological Institute of Lisbon, from the evacuations of about forty of the Lisbon patients. This bacillus is asserted to be "distinctly different from the typical comma bacillus found in true Indian cholera," and CHANTMESSE claims to have established "a close relationship" between this Portuguese bacillus and that observed by FINKLER and PRIOR in the epidemic of cholera nostras in 1884, and seems inclined, on this ground, to class the Lisbon epidemic with that of Genoa. In doing this, however, he ignores the only symptomatologic difficulty which prevents the Lisbon cholera from being classified as true Indian or Asiatic cholera, namely, the light mortality. In Genoa the disease denominated cholera nostras by FINKLER attained almost the maximum mortality of cholera in India; out of 586 cases in twenty days there were 351 deaths—a mortality of almost 60 per cent. In this Lisbon epidemic the mortality was practically *nil*.

If the bacillus of PASTENA and CHANTMESSE was the epidemiologic cause of the outbreak in the Iberian capital and so closely resembles the bacillus of FINKLER and PRIOR, what *tertium quid* was lacking to produce the mortality of the Genoese outbreak? It begins to look as though we should have to fall back on the theory of "mixed infection" to account for the protean manifestations of cholera.

CORRESPONDENCE.

LETTER FROM EUROPE.

No. III.

PRAG, BOHEMIA, JUNE 28, 1894.

To the Editor:—A clinic in internal medicine here, differs but very little from one given in our own colleges. One advantage, however, is the fact that the cases have all been under observation for some time before being brought before the class, so that all facts concerning the patient are accurately known; this advantage is also possessed by our own schools where patients are brought from a hospital where clinical data have been obtained, and where the sole dependence for clinical material is not upon the dispensary.

It is worthy of note that in every case that comes before the class, not only is the urine most carefully examined but the blood as well, *i.e.*, the blood count is made and the hemoglobin estimated. The Thoma-Zeiss instrument is the one commonly employed here for counting the corpuscles, both white and red,and the Fleischl hemometer for estimating the percentage of hemoglobin. Great stress is laid upon the enumeration of the leucocytes, in many cases their number being of much more importance from a diagnostic point of view than that of the erythrocytes. A marked leucocytosis is always regarded as pathological and usually as indicative of an exudative inflammatory action in some part of the body. The blood is not stained except where there are special indications for it, *e.g.*, in suspected septicemia, malaria, leukemia, etc. Beautiful karyokinetic figures were shown to me the other day, in the nuclei of red blood corpuscles from a case of leukemia. This careful attention to the examination—and to the repeated examination—of the urine, blood, sputum, feces, exudates, etc., leads often to most positive, and sometimes brilliant diagnoses. Yet the attractiveness of these comparatively newer, and not always as yet, fully understood, methods of diagnosis is liable to lead even the best of diagnosticians away from what might be called the grosser details of a case; and carried away by the success of some new test he may overlook that which, twenty years ago, would have been surely found. For instance, a case of "cryptogenetic septicemia" was exhibited to the class and streptococci from the blood clearly proven. Every week the blood was examined and the diagnosis confirmed by the finding of the cocci. But the large retro-pharyngeal abscess, the multiple abscesses of the liver, and the old appendicitis, the starting point of all the septico-pyemic trouble, were not revealed until the autopsy. Usually, however, there is excessive care in the examination of patients in every particular and a very accurate diagnosis.

In this University, as in so many others in Europe, there are two medical clinics. I believe the little rivalry that exists between the two clinicians is a good thing for both teachers and students, and particularly where both clinicians are good men and yet, as here, of totally different stamp. Jaksch, as one might judge from his writings, lays great stress upon the aids to diagnosis to be derived from chemic, microscopic and bacteriologic examination; he looks at his case from a strictly scientific standpoint. Pribram, while not underestimating the examination of urine, blood, stomach contents, feces, lays more stress upon the anamnesis and the physical examination of the patient himself. He always speaks at length and most instructively, of the therapy which Jaksch often dismisses in a few words. These words are apt to be—"calomel," "digitalis," or "venesection or wet cups." The amount of calomel given in his cases as anti-syphilitic, purgative, diuretic, alterative

is really astonishing. He employs blood letting quite freely in uremia and in pneumonia. Very rarely is there salivation. Pribram, much the older man, is much more reticent about the administration of mercury in any form. Opium, for pain, is also given by Pribram very cautiously indeed, as it seems, almost over-cautiously. As antipyretic and antiseptic, Jaksch has been using lactophenin and apparently with good results. In chlorosis he employs ferratin.

It is a pleasure to listen to either one of these men and feel that you are listening to an all round medical man and not to a specialist. Either one talks as well of the diseases of the heart as of the kidney, as well of the lungs as of the brain or of the stomach, and I feel sure that the presentation of the cases in the general clinic has a better teaching effect, if I may so speak, and gives the student broader and more comprehensive views of clinical medicine, than where one man constantly presents, and talks about, diseases of the heart, another only of the kidney, another of the stomach, another of the nervous system, etc.

There is no scarcity of material here for clinical work, and one can go into the wards at any time and find cases illustrative of most of the commoner, and many of the rarer affections. The frequency with which carcinoma is met with and the common occurrence of rickets, are remarked by every American coming to these parts of Europe. Suicide is here an everyday affair. If a young man is affected with "unglückliche Liebe," the proper thing for the man to do is to use the revolver on himself or throw himself from the bridge into the river. If the afflicted one is a female, she promptly eats the heads of a few boxes of matches and is shortly utilized to enlighten the students concerning phosphorous poisoning, its diagnosis and treatment, or as not infrequently happens, to illustrate by microscopic preparations the extensive fatty degeneration found in such cases. Münzer, lately Jaksch's first assistant, has written a very exhaustive article upon phosphorous poisoning.

Within the last two weeks I have seen three clinical cases that were very instructive to me, and that may not be without interest to JOURNAL readers.

The first was shown by Prof. Pribram. The patient was a young man, 28 years of age, who has, I judge, been exhibited in Vienna and other cities where the clinician is willing to pay something for the privilege of presenting such an unusual case. In 1885, *i. e.*, at 19 years of age, the patient was confined to bed with headache, fever, pain and swelling in one of the arms. For several months there were fluctuations in the symptoms, now one portion of the body and now another showing the pain and swelling, and again the pain being entirely absent. At the site of the previously painful swellings, bony masses developed, many apparently connected with the adjacent bones, others seemingly free and permeating, if not displacing, the muscular and inter-muscular tissues. The condition of the poor fellow was truly pitiable. The neck was stiff, the spinal column fixed an an angle of about 120 degrees, the jaw immovable so that only liquids could be taken through a tube,—teeth having been removed to enable the latter to be introduced; the arms fixed by the side. He was able to walk with a sort of shuffling gait. Fortunately, so far at least, the muscles of respiration and of deglutition are unaffected. The diagnosis of the case was *myositis ossificans*. As in many of these cases, the large toe was short and blunt and its end joint ankylotic and exostotic. No new light was shed upon the etiology or pathology of this rare and but little understood disease by this case.

A second case was shown me by Jaksch's assistant. The patient, 51 years of age, is a fixture in the hospital, having been here, I think three years and being shown clinically every year to demonstrate Erb's *progressive muscular dystrophy*. He is in fact the same man whom Erb eight years ago carefully examined and whose case was fully described by him at that time. Eight years ago the patient, a man, noticed a gradually increasing weakness of the upper extremities, finally incapacitating him for work; walking soon tired him out. All the muscles of the shoulder girdle became paretic, allowing the shoulders to drop. The constant weight of the upper extremity pulling on the shoulders causes much pain when the arms are not supported. There is great weakness also in some of the muscles of the lower extremity. Some muscles *e. g.*, the pectorals, seem to be entirely atrophied. Others, as the deltoid and quadriceps extensor femoris, present the bulging contour and hard feeling of the pseudo-hypertrophic paralytic muscle. That this is the real pathologic condition might be judged by the great weakness of the muscles in spite of their increased size, and is proven by the microscopic examinations made both by Erb and in Jaksch's clinic. The case is carefully watched and any changes that occur scrupulously noted. The quadriceps femoris, for instance, that was observed by Erb to be small and atrophic, has gradually grown larger yet weaker, *i. e.*, is pseudo-hypertrophic, and microscopic examination of a piece of the muscle shows the atrophy of many fibers, the deposit of fat, etc., characteristic of this peculiar muscular change. Aside from this muscular or nervous trouble the patient is well. An ingenious device somewhat corset-like, has been fitted up to assist in holding up the shoulder girdle.

The third case was one of grand hysteria where the phenomena of that marvelous disease so clearly portrayed by Charcot and his school were exhibited in a typical manner. Prof. Jaksch who gave two clinical lectures, each an hour and a half long on this case, was able by pressure over the left ovarian region to throw the patient, a girl about 20, into a condition of opisthotonus as marked as is ever seen in strychnia poisoning or in tetanus. She was readily hypnotized and would then, according to the Professor's directions, manifest the phenomena of monoplegia, hemiplegia, paraplegia, etc., would eat soap and regard it as chocolate, imitate with remarkable accuracy the gait and voice of an old woman of 70, etc. About all the acts of hysteria, hypnotism and mesmerism were seen in this clinic. The patient is to be kept under observation for some time and it is to be seen how far the functions of various organs can be influenced by hypnotic suggestion. Thus she is to have, if the experiments are successful, on one day diarrhea, on another constipation; and in analogous ways polyuria, anuria, vomiting, etc., will be produced.

Two cases that came to autopsy were very instructive. The one seen to-day was actinomycosis of the middle ear, invading the adjacent muscular and bony structures. Death was caused by rupture of the vertebral artery, probably from the bursting of an aneurism, the result of the invasion of the vessel wall by the parasite. The primary focus was not definitely located, clinically or macroscopically post-mortem, though microscopic examination Prof. Chiari thought, would show the tonsil to be the seat of old inflammatory actinomyotic changes and the point of entrance of the parasite.

Another case coming to autopsy a few days ago, was a primary endothelioma of the right pleura with secondary deposits in lungs, pericardium, liver and peritoneum.

The call of Prof. Gussenbauer from Prag, to be the successor of Billroth has caused deep regret that so valuable a man is lost to Prag, but also a feeling of pride that this University possessed a man deemed worthy to fill the chair of the great surgeon of Vienna. Prof. Gussenbauer commences his work in Vienna October 1.

In my next letter, I hope to say a word concerning the work done here in children's diseases and in gynecology.

Truly yours, JAMES B. HERRICK, M.D.

LETTER FROM BERLIN.

On the Production and Application of Curing Serum-Liquids (Heilserum), for Diphtheria. German Surgical Congress.

[From the Berlin correspondent of the JOURNAL.]

BERLIN W., July, 1894.

The Professors Ehrlich, Kossel and Dr. Wasserman, in Berlin, have published a paper on the application of curing serum as invented by Prof. Behring, assistant of Prof. Koch. Behring had undertaken to give an immunity from the diphtheritic poison and after that, to get a serum from the blood of those animals, by which he hoped to protect individuals of the human race against the results of diphtheria as well as to cure the disease when already developed in an individual. Ehrlich, Kossel and Wasserman have followed Behring in his experiments. They always had in view to use the results of their experiments for curative purposes. They experimented on goats. We will say nothing of the technical dates for giving the serum. Two hundred and twenty patients with diphtheria were treated with the serum. Of these there were cured 168, or 76.4 per cent.; fifty-two died. Tracheotomy was performed in sixty-seven cases, of which thirty died; the rest recovered. But a true insight of the curing effects of the injections is gathered only by grouping the number of the diseased people by the days after the infection on which the treatment was begun:

Day after beginning of treatment.	Treated.	Cured.	Died.	Percentage of cures.
1st day	6	6	0	100
2d day	65 (9 tracheotomies.)	64 (7 tracheotomies.)	2 (2 tracheotomies.)	97
3d day	29 (8 "	25 (7 "	4 (1 "	86
4th day	39 (14 "	30 (10 "	9 (4 "	77
5th day	23 (10 "	13 (4 "	10 (6 "	56.5

It is to be seen by this table of dates that the safety of the serum treatment depends essentially upon the date on which the treatment of the children is begun, and that on the first day results were had never seen before. Of seventy-two children received at the hospital during the first two days of the disease, there were only two deaths; of seventy-two cases treated *without* serum after statistics reaching over twenty-five years, there were twenty-five deaths, or 34.7 per cent.

The above named experimenters give the following points of view for the treatment with their serum of those children sick of diphtheria: 1. *The fate of the children depends upon the treatment during the first three days of the sickness.* Therefore the serum should be injected as soon as possible after the beginning of the disease. 2. As there must be a surplus of antitoxin in the sick body, the dose of commencement should be, in light cases, at least 200 unities of immunization.[1] In cases of gravity and in those tracheotomized, 400 unities were needed. The treatment with serum should be continued some time after ceasing of rise of temperature and of the local inflammation. The total amount of dispensed serum may reach in a single case (in correspondence with the gravity of the symptoms) 500, 1,000, 1,500 unities of immunization.

TWENTY-THIRD CONGRESS OF THE GERMAN SURGICAL SOCIETY.

(Held at Berlin, April 18-21, 1894.)

HOFFA, of Wurzburg. Pathologic Demonstration concerning Operation of Congenital Luxation of Hip Joint. He showed the pelvis of a child operated upon on both hip joints with good functional result afterwards, which had died of diphtheria. A pseudarthrosis had been formed on the pelvis lined with hyaline cartilage. Operation should be performed during the third to sixth years on account of the head of the femur bone getting altered afterwards, as well as the upper parts of the femur. If these deformations are present the operation becomes more difficult, especially when the neck of femur is crooked forward. The caput femoris would then leap out of the acetabulum and one was obliged to make osteotomy of femur beneath the great trochanter to bring the femur into straight position. When the luxation is on both sides, generally the ligamentum teres is wanting; when unilateral, the reverse is generally observed. When it is wanting, a slight knock or cracking is heard in rotation. If this be heard, reposition may be effected by unbloody proceedings; if the ligamentum teres is present, operation should be done. In older persons it is well done not to try reposition, on account of the alterations of the head of bone. For such cases he has tried a new proceeding: The capsule of hip joint and the ligamentum teres rendering reposition of the luxated caput impossible, he makes an arthroclasis, cutting from the margin of the capsule upwards to the ilium, shoves back the capsule and scrapes off the periosteum. Then the caput femoris is placed upon the naked bone in strong abduction, and fixed in this position until bone to bone is connected. The caput is then fixed by new grown connective tissue.

SCHEDE, of Hamburg, said that the alterations of the head of femur had nought to do with age. He has seen crooking of the neck of femur (coxa vara) twice in early life, but without disturbing the operation. In older persons, where the caput is strongly misplaced upwards, extension with heavy weights for some months is useful, with or without dividing muscles and sinews of the leg before the operation. The latter proceeding has had good success in two cases; one of congenital, and one of traumatic luxation of hip joint.

LAUENSTEIN, of Hamburg, proposes to prevent the dressings from getting wet with urine in little children, to protect the wound and gauze, etc., upon it, by a bow made of wire, whose ends are fixed on the skin with the usual cambric rolls.

WAGNER, of Konigsberg, has cured the congenital luxation in a girl of 17 years by operation, loosening the muscles and diminishing the very large caput femoris by cutting round like the shells of an apple. Then it could be managed into its place. The former shortening of leg of seven and one-half centimeters was reduced to two and one-half centimeters after the operation. After operation careful mechanical treatment is needed.

WAREWSKI, of Berlin, is of opinion that the deformation of the caput and colles femoris in these cases of congenital luxation is due to hereditary faults of the kernels of bone and cartilage, becoming manifest in the time of growth. If this should be so, such hereditary faults could develop themselves after a well performed operation, overcoming the primary good effect of it. One should not hope too much of Hoffa's operations, at least for permanent good results. Not all the cases offered those hopeful anatomic conditions as those published by Lorenz and Hoffa, but now, where the neck of femur was missing and the head deformed, effects of reposition were very doubtful. There were many transitions between those cases in which the dislocation of the hip was remarked during the first days after birth among other malformations, and those where the children began to walk in their second year of life or later. All those transitional forms had their different anatomic construction, and therefore should also be differently judged as to therapeutics.

MIKULICZ, of Breslau, has constructed a reposing machine working firstly abduction to 60 to 100 degrees, then inward rotation to a right angle, and finally extension with five to ten pounds (old German weight). Three cases cured in this manner. The treatment is troublesome and takes a good deal of time. Only for very young children.

GUSSENBAUER, of Prag, had a good result in one case by the osteoplastic proceeding of Kising. The heads are fixed firmly in the acetabulum of both sides; action of leg satisfactory.

SCHEDE, of Hamburg, on the non-operative treatment of dislocation (congenital) of hip joint. Hoffa had not done well to doubt cures of this disease in the anatomic way (without an operation). Mikulicz already had proved him wrong on this point.

SOHR presented a patient treated after Taylor's method, only in the reverse sense, inasmuch as there is used no abduction, but adduction and extension. The apparatus is able to reduce the caput in the majority of the children, and the trochanter is retained in its place by transverse pressure.

V. BERGMANN recommends the fixation with the dressings of Herzig, by which he had seen perfect cure. The results

[1] A dose of antitoxin serum equal to avoid in the body the consequences of the poisoning with diphtheritic poison, is called by the author a "unity for immunization."

of operation were unfavorable in most cases, antisepsis being very difficult.

V. MURANUS, of Leipzig, has also seen very bad results of Hoffa's operations. As for abduction, the important point is the existence of caput and colles femoris. If the latter is wanting the results are bad, even when the cases are not operated.

V. BRAMANN, of Halle, has operated upon fourteen cases of grave character. One died of tuberculosis miliaris; the rest recovered. He had always good success in these operations up to children of 11 years of age. B.

(To be continued.)

Letter from Ex-President Hibberd—His Return Trip from San Francisco.

To the Editor:—On June 11 some of the members of the AMERICAN MEDICAL ASSOCIATION who had return tickets via the Northern Pacific deemed it prudent to accept the arrangement by which their tickets would be honored over the Southern Pacific to Ogden and the Union Pacific to Butte, and on June 12 a larger number availed themselves of the same privileges. This was done for the reason that they discredited the statement that the flood damage to the Northern Pacific would be repaired by the time they arrived at Portland. With more faith about fifty of us took the evening train on June 12 for Portland, which we found still largely under water, but by a long steamer ride down the Willamette and Columbia Rivers—or where the rivers ought to be for the whole country was covered with water—the boat ran into what was usually a creek, and winding among the trees about five or six miles we reached a railroad bridge across the stream, disembarked on the moist earth, climbed into the train, went to bed and woke up next morning in Tacoma with our car on a side track at the wharf, and a steamer alongside to take the party down Puget's Sound to Victoria in Her Majesty's dominion, to return to Tacoma next morning. Having some arrangements to make for Pullman accommodations, myself and ladies remained in Tacoma during the day.

Completing our arrangements in Tacoma we left for the East on a belated train at 3 o'clock on the morning of June 16, and arrived at Spokane the next morning to find the road still impassable between Spokane and Helena on both lines via Missoula and Butte, but the agents declaring they expected dispatches every hour notifying them of a restored road. We waited two days without apparent progress of repairs and then twenty-one of us accepted an order from the Northern Pacific on the Union Pacific, which by a round-a-bout line via Walla Walla, Umatilla on the Columbia River, and Pocatella, covering 1,200 miles, landed us at Butte, Mont., on the morning of June 20. Leaving Butte at 9:20 A.M., June 21, we arrived at Bozeman at 1 P.M., to find that our connecting train was ten hours behind time and might be more. An earnest petition by wire to headquarters at St. Paul to continue our train to Livingston met with prompt response, making our train special, not only to Livingston but to Cinnabar, fifty-one miles further, when we were met by coaches which delivered us at Mammoth Hot Springs Hotel in the Yellowstone Park at 9:30 the same evening.

The next morning we left for the tour of the Park and returned on June 26, to find all further progress arrested by the strike. Here we waited day after day. The hotel made us comfortable, but no mails and no newspapers, with wild rumors about every railroad in the United States being tied up, we felt the burden of imprisonment and isolation to an intense degree. On July 1, we organized the "Association of Distressed and Stranded Tourists" which embraced about 120 persons of both sexes, ladies predominating. The Association at once secured a limited report of the more important strike items wired to us from the press dispatches delivered at Anaconda 200 miles west. It was at once learned that the Great Northern Railroad was open from Helena to St. Paul, and Chicago entirely cut off from railroad travel. Helena could be reached by 182 miles staging over the crest of the Rockies, but notwithstanding the severity of the ride and its expense some of the imprisoned tourists began to leave, the first on July 2, the number increasing from day to day, and so far as advised, all reached St. Paul in from five to seven days. At Helena, through an arrangement between the Northern Pacific and Great Northern Railroad, the tickets on the Northern Pacific were honored on the Great Northern, and parties found no difficulty getting through either to St. Paul or Chicago.

The whole number imprisoned in the Park at first was about 170, all of whom ultimately reached the Mammoth Hot Springs Hotel, but many went to Livingston and then elsewhere as they could find conveyance. The largest number at the hotel at one time was 127.

On July 11 a mail came in, the first since June 26, and we received files of Helena and Anaconda papers to June 9, which gave us the first understandable account of the inauguration and progress of the strike. These papers with some belated letters were boons indeed.

After considerable telegraphing the railroad authorities on July 12 wired us that a train would be ready for us at Livingston to take us to St. Paul on the afternoon of July 13, but in consequence of washouts trains could not be sent to Cinnabar for an indefinite time, so we packed our trunks for a sixty mile stage ride.

Thirty-five of us left the hotel at 7 A.M. on July 13, arrived at Livingston at 10 P.M., the latter part of the road being very tedious, miles of it deep mud and water from a cloudburst the evening before. A merchant on an unpaved street told me the water in front of his place was three feet deep, coming on to his porch. This was the second cloudburst in three weeks.

We supposed from our telegrams the train would be waiting for us at Livingston, but on arrival were informed that it would not be in until the 14th some time.

A train came in from St. Paul on July 14 at 4 o'clock and left about 5. Before the train reached the station the soldiers formed in line on each side of the track, a man fully armed every fifteen feet, and remained on guard until the train left.

At 10 o'clock P.M. our train arrived from the west and the soldiers guarded it as they did the westbound. When the train went west two days before a striker crowded on to the guard line and refused to leave, using defiant and abusive language to the commanding officer, who then cut his head with a saber. Our train was guarded until it left at 1 A.M. on July 15.

This was the first we had witnessed of the actual use of soldiers. True, troops at the Hot Springs in the Park had received marching orders at 4 P.M. on July 7, and at 7 o'clock were in the saddle and off, the public knew not where, but we guessed, and have since learned they were guarding the Bozeman tunnel. Ours was the first train East since the strike, and was picking up delayed travelers wherever it found them. Next morning we found our train consisted of sixteen cars of all kinds and under guard of soldiers carried on board—as every train was—and every bridge, trestle and important culvert guarded by soldiers, and large bodies of troops concentrated at strategic points. The dining car with us had its hands full to feed the promiscuous company aboard, but it was the only resource.

At an early hour Monday morning, July 16, we passed Bismarck, and being out of Montana and out of danger, had left our military guard at Mandan.

From Bismarck our trip was uneventful, and we arrived at St. Paul at 1:30 o'clock on Tuesday morning, and as the railroad authorities offered tourists who wished to take the early trains East the privileges of their sleepers and accommodations for the night, our party with others accepted, and with an early start arrived in Chicago at 9:45 P.M., July 17 well and in good condition, and expect to reach home after an absence of fifty-two days.

We left about thirty tourists at the Mammoth Hot Springs Hotel in the Park; there were no physicians among them, but we found several at Livingston awaiting the first train. Dr. Montgomery took a census of our train and reported ten members of the AMERICAN MEDICAL ASSOCIATION on it with nine ladies, and four tourists, doctors, with thirty-four other gentlemen and ladies who had been prisoners in the Park with us.

J. F. HIBBERD, M.D.

Beaumont Medical College.

ST. LOUIS, MO., July 10, 1894.

To the Editor:—Dr. W. B. Outen, Dean, requests me to say "that some months ago there appeared what purported to be an unofficial announcement from St. Louis that the Beaumont Hospital Medical College was about to close its doors. Had this statement come to my knowledge before now, I should certainly have asked for its immediate correction, for it had no foundation in fact and must have been promulgated by some one who intended that the Beaumont Medical College should be injured by the publication. Far from closing its doors our school is in a most flourishing condition. We have been so fortunate as to have secured from those interested in higher medical education, such financial assistance as practically to place the school on a firm financial basis, and to insure its perpetuity. We have never been the competitors of those who heralded their schools and incidentally their personality to the medical public. We have gone along the even tenor of our way doing conscientious and, we believe, good work in the cause of medical education, and we feel aggrieved to think that your JOURNAL would publish, without proper inquiry, a statement which is calculated to do us an injury, and we respectfully request that you give to this denial as much prominence as was given the original statement."

REVOCATION OF LICENSE.

The Secretary of the State Board of Health, of Missouri, has been instructed at our last meeting at Kansas City, to furnish to your JOURNAL the proceedings, more especially that portion of them which relate to the revocation of the license to practice in our State, of Dr. J. P. Henderson, a resident of Chicago, who was an itinerant for the last six months in Missouri. Dr. Henderson was a regular graduate and a licentiate of the Illinois State Board of Health, and is President of the Illinois State Institute of Medicine and Surgery. He registered in this State upon a diploma and letters of recommendation from medical men of Chicago and then spread his advertisements broadcast. Physicians of Nevada, Vernon County, Missouri, called the attention of the Board to his advertisements which were so worded as to mislead the public. After a hearing, the Board unanimously decided to revoke his license for unprofessional conduct. Our State has too long been the refuge of just such fellows, and the Board proposes in future to enforce the law, and to protect our people.

(Signed) F. J. LUTZ, M.D.,
President State Board of Health, of Missouri.

North Texas Medical Association.

SHERMAN, TEXAS, July 10, 1894.

To the Editor:—Having just received the last number of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, I notice in it an account of the meeting of the North Texas Medical Association which was held in this city on June 19, 20, 21, which notice does the Association an injustice as the program which I enclose will prove. All the papers therein contained were read except those marked out, and a number of cases reported not on the program, all of which were discussed.

There were in fact more than one hundred members present, instead of seventy-five as stated.

This Association meets semi-annually. The next meeting will be held at Gainesville the second Tuesday in December.

Yours very truly, J. T. WILSON, M.D.

Sanitarium in New York.

To the Editor:—The Sanitarium concerning which your correspondent, N. H. P., makes inquiry in the JOURNAL of July 7, page 37, is probably that under the care of Dr. E. L. Trudeau, at Saranac Lake, New York.

A. H. E.

SOCIETY PROCEEDINGS.

Medical Society District of Columbia.
Report on Typhoid Fever.

[*Continued from page 82.*]

2. The relations of the mortality of typhoid fever and its distribution in different sections of the city to the pollution of the soil by the leakage from privies, and to the drinking of contaminated well water.

The truth of the theory may be considered as established that there is a relationship between pollution of the soil with human excrement and the drinking of well water contaminated with the poison of typhoid fever contained in this excrement. The converse of this has also been absolutely proved that typhoid fever can be diminished—almost eliminated—by a proper purification of the soil and the drinking of pure water. Facts will be alluded to further on, which will illustrate this point.

Out of a total of 1,174 squares in Washington and Georgetown, deaths from typhoid fever occurred in 426 squares, or one death in about two and two-third squares.

If the city is arbitrarily divided into four sections, Georgetown making the fifth, and the number of deaths from typhoid fever during the last five years be marked in the localities in which they occurred, it will be seen that there is a great difference in the distribution of mortality. In region 1 (all that part of the city south of East Capitol Street, and the public grounds, including the southeast and southwest parts of the city), there are a very large number of cases. In this area there were 197 fatal cases in 131 squares, and in region 2 (east of North Capitol Street and north of East Capitol Street) in 59 squares there were 84 deaths. In region 3, comprehending all that part west of North Capitol Street and east of Thirteenth Street and north of the public grounds, in 116 squares there were 179 cases. In region 4, west of Thirteenth Street to Georgetown and north of the river to Florida Avenue, in 82 squares there were 114 deaths. In Georgetown in 38 squares there were 52 fatal cases. Assuming that each death represents 10 cases of typhoid fever, in the five years there were about 6,260 cases in Washington, at the rate of over 1,200 cases a year. Of these there were nearly 400 cases a year in the southeast and southwest districts, 170 in the northeast, 360 in the middle region, 230 in the northwest, and 100 in Georgetown, 400 in hospitals and public institutions, and 190 in the county. If we add the cases occurring in hospitals and the county to those in the city proper we have a total of 9,220 cases in five years, an annual average of 1,444 cases.

The percentage of deaths from typhoid fever in each of these divisions to the contained population is:

Region.	Population of region. Police census 1892.	Total deaths from typhoid fever in five years in each region.	Annual rate of mortality to 10,000 population in each region.
I. (South)	62,218	197	1.3
II. (N. East)	26,278	84	6.2
III. (Central)	70,865	179	5.0
IV. (N. west)	49,969	114	4.6
V. (Georgetown)	16,344	52	6.3
County	30,429	95	6.2

The interesting fact is to be noted in this table that the annual rate of mortality of the whole District being 6.2, that of the northwest section is 4.6; central region, 5.0; south, east, Georgetown and the county having each the same average, practically as that of the total District average.

The close relation of a soil polluted by sewage to typhoid fever prevalence is admitted to be a causal relationship, and no argument need here be adduced to support a theory so universally adopted. In Washington and the District there are three modes of infection of the soil with human excreta and sewage:

1. The overflow and leakage from privies.

2. The leakage from defective drain pipes in the soil.

3. The backing up of sewage in the sewers draining the lower parts of the city, and the flooding of basements and cellars.

The existence of the privy method of disposing of human excreta in cities is sufficient evidence of a contaminated soil.

Map No. 4 shows the numerical distribution of the privies of Washington. There are in the city limits 8,959 box privies, 5,133 in the county, a total of 14,092.

In the 1st division (South) there are	3,994
In the 2d division (N. E.) there are	941
In the 3d division (Cent.) there are	1,086
In the 4th division (N. & W.) there are	1,761
In the 6th division (Geo.) there are	1,177
	8,959

Squares 743 to 795 in the southeast region may be cited as an example of the relative distribution of privies and closets with sewer connections:

Square 743	82 privies	13 closets
Square 766	23 privies	6 closets
Square 768	14 privies	3 closets
Square 779	41 privies	14 closets
Square 799	21 privies	19 closets
Square 795	24 privies	22 closets
	289	355

In 14 squares in the northwest part of the city there were 153 privies and 297 closets.

1. The report of the inspector shows that for the nine years ending June 30, 1891, there were 42,197 full or overflow privies reported, 6,455 boxes with leakage, and 663 old and dilapidated boxes. In one year, 1892, there were 465 boxes noted with leakage. It is difficult to ascertain the extent to which the saturation of the soil takes place in this way, but the above facts demonstrate that the saturation with excrementitious matter is a necessary result of such conditions.

2. Every report of the engineer department of the District government contains a statement as to the relaying of pipe sewers. In the year 1892 there were 1,534 linear feet of sewer pipe which were taken up and relaid; 8,438 linear feet of obstructed sewers were replaced. "These sewers were faulty in gradient, alignment, and because of defective joints, allowing the intrusion of tree roots, and in quite a number of cases, they were of insufficient size. They were all laid under contracts made with the board of public works in 1871-'74."—(Report upon the sewerage of the District of Columbia, by Board of Sanitary Engineers, June, 1890.)

All the pipe sewers laid prior to 1874 require to be replaced by those of suitable construction, with joints protected by concrete. It need not be added that such defective sewerage conditions permit the saturation of the soil with fecal matter.

3. A third cause which prevents thorough drainage of the soil and adds to the dangers from saturation with sewage is found in the fact that from the foot of Capitol Hill westerly to the Potomac River there is a long, flat area only a few feet above high tide. To the north and east the ground rises; the soil of the lower area is moist, that of the elevated territory is composed of compact gravel, clay and loam, and is comparatively dry. "Owing to the absence of slope, and therefore of scouring velocities," in the sewers in the south and east, accumulations take place in the sewers, which are added to by the entrance of tide water. In the Tiber Creek sewer these deposits reached two to three feet in depth and several thousand feet in length, reaching nearly to the present District building. The daily effect of the entrance of the tidal current into the sewer is to prevent the complete emptying of the drains and in times of floods great quantities of noxious sewage is carried into cellars and basements.

The drinking of the infected water of wells has long been known to be a mode of propagation of typhoid fever. If the soil of the city is receiving a considerable portion of the excreta of typhoid fever cases; if much of that soil is badly drained and wet with returned sewage, is it possible to avoid the danger of the fouling of well water?

In that low section of the city in which there is the most imperfect drainage, in which the soil is most contaminated by the defective sewerage, there are many thousand inhabitants with 3,994 privies, drinking the water from 140 wells.

In the southern region, with 197 fatal cases, there were 140 pumps, now reduced to 87; in the northeast 84 fatal cases and 47 pumps, now reduced to 29; in the middle area 179 deaths, 70 pumps, now 42; in the northwest, 114 deaths, 34 pumps, now 22. (The number of pumps here given is taken from a map published by District Commissioners in 1889, and list furnished May, 1894.) In Georgetown there were 52 deaths with 18 pumps, by May list, 19 by map. It can be assumed that where there are the largest number of pumps there is the largest consumption of well water; that well water is used most largely by the poor, and in those quarters of the city where the water and sewer connections are fewest; and that Potomac water is used chiefly where the water and sewer connections are most numerous.

We know that water from the 310 pumps existing at the report of 1889 was largely used by the people living on the 426 squares in which the 626 fatal cases occurred. The number of wells here given may not be strictly correct, as errors have been found in the map of 1889. It is, however, approximately correct.

Even by those having access to Potomac water, well water is largely consumed on account of its being colder during the hot months of the year.

The object of these considerations is to show that the soil underlying the city is being constantly impregnated with human excrementitious matter, and with all microörganisms therein contained, and that the water of wells liable to be contaminated with such material is being constantly and generally used as drinking water by the people.

It is not an assumption that the well water thus consumed is infected and dangerous to health. It is a matter of chemic and bacteriologic demonstration.

At the end of 1890 there were 271 public pumps in service; 17 of these were abandoned during the year as being no longer fit for use.

In the report of the Engineer of the District for 1889-90 it is stated that 75 per cent. of the water of wells examined was found to be suspicious; in the northwest 71 per cent. was bad or suspicious; in the southwest all examined were bad or suspicious; in the northeast two out of three; in the southeast 40 per cent. and in the county 70 per cent. The report adds that the only excuse "for keeping the wells open is the filthy condition of the aqueduct water and the high temperature which it reaches in the mains in summer, often 85 degrees, which is far from palatable to the poorer classes who are unable to purchase ice."

In the following year nine wells were filled and abandoned. In the year ending June, 1892, of fifty-seven wells examined, 24.6 per cent. were condemned or declared very suspicious; fourteen were filled or abandoned. The wells of the county were, as a rule, more contaminated than the city wells, a condition due to the fact that the soil of the city is better drained by sewerage than that of outlying districts.

The report for the year ending June 30, 1893, states that a larger number of wells were condemned than in the previous year, "owing to the large number examined from the low portion of the city in the southeast and southwest sections." Fourteen were found dangerous.

This is the very section of the city in which the number of fatal cases was so great in the five years.

In the recently published report of the examination of the water of the city wells by Drs. Theobald Smith and Mew, sixteen wells were reported as examined bacteriologically by Dr. Smith, and the conclusions reached were favorable to the general purity of the well water. Five wells only were found to contain fecal bacteria; the water of four was in good condition, and that of seven in need of improvement.

The suggestion is made by Dr. Smith that the wells upon which a favorable report is made should be retained, that others should be improved and that bacteriologic examinations should be made at least once a year to determine the fitness or unfitness of the water for drinking purposes. He also suggests that wells considered safe should be so labeled. But is not the fact that some wells at a particular date contain fecal bacteria a sufficient reason for condemning the whole system?

The following report of bacteriologic examinations of thirteen wells made for the committee by Dr. J. J. Kinyoun fortifies these views of the general unhealthfulness of the well waters:

Sample No.	Location of well.	Result of Examination.	Condition of water.	Recommendations.
1	East side 7th street between M and N streets N. W.	Sewage bacteria. Colon bacillus isolated.	Bad.	Well should be closed.
2	Lot on east side 6th and 7th N. W.	Sewage bacteria. Colon bacillus isolated.	Bad.	Well should be closed.
3	East side 7th street between M and N. W.	Sewage bacteria. Colon bacillus isolated.	Bad.	Well should be closed.
4	10th and S streets N. W.	Sewage bacteria. Fecal bacteria. Colon bacillus isolated.	Bad.	Well should be closed.
5	16th and Corcoran streets N. W.	Colon bacillus isolated.	Good.	Should be kept under observation.
6	17th and K streets N. W.	Ordinary forms usually found in water.	Suspicious	Should be kept under observation.
7	10th street between B and C streets N. W.	Sewage bacteria. Colon bacillus isolated.	Bad.	Should be closed.
8	3d street and Indiana avenue N. W.	Sewage bacteria.	Bad.	Should be closed.
9	T and 18th streets N. W.	Ordinary water bacteria but in large numbers.	Suspicious	Should be kept under observation.
10	22d and G streets N. W.	Sewage bacteria.	Bad.	Should be closed.
11	18th and S streets N. W.	Sewage bacteria in great numbers.	Bad.	Should be closed.
12	K street between 21st and 22d streets N. W.	Sewage bacteria. Colon bacillus isolated.	Bad.	Should be closed.
13	6th and H streets N. W.	Ordinary water bacteria in small numbers.	Good.	Should be kept under observation.

As long as causes of soil pollution exist, is not one well as liable, or nearly as liable, to contamination as another? And the fact that one well contains no bacteria, another a few and another many, is no proof that all are not liable in different degrees to become at some time infected. To be under the necessity of labeling each particular well as healthy or unhealthy, after annual examination is an endless task and a most unscientific procedure, for how many individuals who wish to quench their thirst will be influenced by the published statement impugning the reputation of a particular well? Even if the individual knows that bacteria are found, he will drink and take the risk. As sanitarians, we must condemn the whole system, and advise an early abandonment of all wells as the only solution of the question. The advice contained in the report of the Sanitary League we believe to be mischievous, and to involve a continued menace to health.

It should be remembered that the water of the sixteen wells reported upon by Dr. Smith is of those which have been permitted to stay, and that over sixty have within the last five years been condemned and filled up. Dr. Kinyoun finds sewage and fecal bacteria in nine out of thirteen examined. For how long a time will these now reported upon as free from fecal bacteria remain so, with the continued presence of typhoid fever among us? Shall we wait for the infection to take place, or shall we remove the possibility of the dissemination of the disease in this way? These are questions to which we should give no uncertain answer.

The lesson of Vienna should teach us what this answer should be. From 1851 to 1874 well water of an impure character was used to a large extent. During this time the deaths from typhoid fever ranged from ten to thirty-four annually in every 10,000 of the population. In 1874 spring water of great purity was introduced, and the well water of impure wells was given up. The annual mortality rate immediately fell to 5.0, and in three subsequent years to 1.1. A good sewerage system was in existence long before this, but it had no effect in reducing the mortality.

One fact to which separate attention should be drawn is that many of our cases of typhoid fever are imported from without. At the end of the summer it is a frequent occurrence for the disease to develop in individuals who have just returned from seashore and other resorts, and a much larger number of our inhabitants go out of town now than formerly. This is one means by which our mortality is increased, and fresh infection is added to that already existing.

INFECTION THROUGH MILK.

The dissemination of typhoid fever by the milk supply in the District has not been investigated fully enough to warrant any extended remarks or conclusions. It would be well to make this a separate matter of study. It is safe to assume from the experience of many observers elsewhere that typhoid fever is to a certain extent propagated by milk; there is nothing in the condition of the dairies from which our supply is drawn to make us think that we are better protected from this danger than other communities where epidemics have been traced to milk infection.

There are sixty-five distinct places in the District where cows are kept and from which milk is supplied.

It has been shown that in Washington there is a coincidence between a soil polluted with the leakage of the excreta from typhoid fever patients, the drinking of infected well water and an extensive distribution of typhoid fever; that where these two first conditions exist to the greatest degree typhoid fever is most prevalent. It remains to be seen whethes the purification of the soil, and the abolition of the water supply from pumps, would lessen the disease.

The belief that typhoid fever spreads by "soil contamination" would be much strengthened if other cities with the same conditions have diminished the percentage of the disease by draining the soil and abandoning the use of well water.

Typhoid fever increases in proportion to the saturation of the soil with decomposing organic matter, especially human excreta.

Typhoid fever decreases in proportion as a city is well sewered.

The greatest diminution in typhoid fever has taken place in England and Germany, where expert engineers and liberal municipal governments have combined in the work of sewering the principal cities. In the cities of Spain, Italy, Russia and Mexico, where the sewerage systems are less complete, the diminution has not taken place.

The history of Munich offers the strongest evidence on this point.

From 1854 to 1859, when no means existed to prevent the fouling of the soil, the mortality was 24 to 10,000 inhabitants.

From 1860 to 1865 the sides and bottoms of the pits of the privies were cemented, and the mortality fell to 16.80.

From 1866 to 1873, with partial sewerage, it was 13.30; from 1874 to 1880, with improved sewerage, it was 9.26, and from 1881 to 1884, with still greater improvements it fell to 1.75 to 10,000 inhabitants.

The experience of Berlin is very instructive to Washington, as showing the difference in mortality in houses with sewer connections and in houses without them where privies were used.

1. In houses with sewer connections there were 15.5 cases and 4.5 deaths to 10,000 population.

2. In houses without sewer connections there were 56.0 cases and 17.9 deaths.

1. In the sewered houses there was 1 case to each 49.3 houses and 1 death to 137.5 houses.

2. In non-sewered houses there was 1 case to each 9.3 houses and one death to 43 houses.

(To be continued.)

SOCIETY NEWS.

West Baden Medical Society.—The annual meeting of Mitchell District Medical Society will be held at West Baden, Ind., July 26 and 27, 1894. Season tickets on sale at all principal railroad offices. Programs will be issued in a few days.

G. W. BURTON, Secretary.

Colorado State Medical Society.—Prize Essays.—Prize of $100 voted by the Colorado State Medical Society, June 21, 1894, for the best essay on the following subject: "The Diagnosis of Tuberculosis by Microscopic Examination of the Blood."

Preference to be given to new evidence and the detection of the pre-tubercular stage. All stages, however, to be included and microscopically differentiated. Paper to be condensed to read in thirty minutes time; to be typewritten and the authorship kept secret till the award of the examining committee is made known. Prize open to any one; essay to be written in the English language in comprehen-

sive style and as free from purely technical expressions as possible; accuracy of definition and clearness of diction considered. The committee to reserve the award for an essay they deem sufficiently meritorious, *i. e.*, the rules to be observed enabling a diagnosis to be made from the blood alone without the patient being seen. A prize committee of three was appointed: Dr. Charles Denison, H. A. Lemen, both of Denver, and Dr. S. E. Solly, of Colorado Springs.

All essays to be handed in by April 1, 1895; under seal.

The following test is suggested as not unreasonable: Seven persons being in one room representing a person in health, a case of anemia, one of leucocythemia, one pretubercular, and three representing the three stages of consumption, *i. e.*, 1, infiltration; 2, softening and; 3, excavation (advanced and extensive). In another room the microscopic examination of the blood of several of these to determine from whom the specimens were taken. It is expected that the ordinary use of the 1-6, 1-10, 1-12 or 1-16 immersion lenses will answer. If not or there is any doubt, full explanations as to instruments or lenses used should be furnished.

BOOK NOTICES.

A Clinical Manual. A Guide to the Practical Examination of the Excretions, Secretions and the Blood, for the Use of Physicians and Students. By ANDREW MACFARLANE A.B., M.D. New York and London: G. P. Putnam & Sons. 1894. Pp. 134.

This little book is greatly to be commended, for it brings within the reach of all, the practical application of the recent great advances in physiologic chemistry and bacteriology. As a volume to depend upon in the office in examining excretions for diagnostic purposes, it will be found very useful.

PUBLIC HEALTH.

Milk for the Poor.—Six milk depots for sterilized milk have been established by the Nathan Straus Charity in the tenement house centers of New York city. The milk is sterilized under the supervision of a competent bacteriologist who examines the supply at stated intervals, and the cows which furnish it are inspected for tuberculosis and other diseases. Raw milk is sold at 4 cents a quart, 2 cents a pint, 1 cent a glass; pure milk sterilized (four 8-ounce bottles) 5 cents a quart; diluted sterilized milk in 6-ounce bottles at one cent a bottle.

Diphtheria in London in 1893.—The Registrar General's summary of mortality in London for 1893 shows a net loss of 3,989 lives during the year. That is to say, if the death rate in 1893 had not exceeded the average rate of the preceding ten years there would have been 3,989 fewer deaths registered in London for 1893 than there actually were. Among the causes of death contributing to this excess were preëminently diphtheria, cancer, premature births and diseases of the nervous system. The excess of deaths from diphtheria was 1,985, the total deaths from the disease being 3,265. This is the most disturbing factor of the death rate, amounting to 0.76 per 1,000—by far the highest yet recorded and exceeding the average of the previous decennium by 0.46 per 1,000.

"Naturforscher."—American physicians and sanitarians attending the International Congress of Hygiene at Buda-Pesth next September, will have an opportunity also of witnessing the "Naturforscher"—a gathering of scientists peculiar to Germany. Its sixty-sixth meeting takes place at Vienna, September 24–30, and the Austrian Parliament has voted $5,000 for its objects, which include investigations in astronomy, mathematics, geography, medicine, hygiene, etc. There will be thirty sections, dermatology and syphilis being added as a separate section this year. Comprehensive preparations are being made and all the resources of the Imperial University will be utilized for the success of the meeting.

Anti-Cholera Inoculation.—During the past fifteen months Dr. Haffkine has inoculated over 25,000 persons with the so-called anti-cholera "vaccine," in Northern India. From such reports as have been made public it would appear that the protection afforded is perfect; many instances are cited where cholera has broken out in places after the inoculations had been performed, with the uniform result, so far as made public, that those who had been inoculated escaped, while numbers of those who had refused or neglected the protection were attacked with the disease and died in the usual proportion. It is stated that M. Haffkine will continue his work in India for another year.

Resuscitation from Asphyxia.—While the drowning season is "on" it may be useful to familiarize one's self with Dr. Laborde's method of restoring the respiratory reflex. It is so simple—using an ordinary tongue forceps, such as is on hand during chloroform or ether inhalation, the tongue is well pulled forwards and regular rhythmical movements are given to it—that it is proposed to issue some plain directions that can be posted in every hospital and be in the hands of every midwife, or any one who may be liable to see asphyxia, such as those who give anesthetics and those called to cases of drowning, etc. It has been tried a great deal in France in the last two years in all sorts of cases of asphyxia, by drowning, electric shock, lightning stroke, and in the cases of apparent death in the newly-born. Some sixty-three cases are given where patients were recalled to life by this method.

Our Diminishing Birth Rate.—There is apparent an increasing tendency to the belief that there are too many people in the world and that thereby the struggle for existence is made harder. Those holding this belief and in whom the logical faculty is strongly developed, naturally decry all sanitary effort on the ground that its success renders more easy the survival of the unfit, who thus live to become not only competitors of, but burdens upon *nous autres*. Without going to this extreme the editor of the *Medical Standard* evidently believes in the general proposition and thinks that the decrease of the birth rate of the United States is a matter for congratulation rather than pessimistic prophecy. "With a rise in the scale of evolution in animals comes a decrease in births and an increase in the period between them. The resulting animal receiving maternal care longer, from a better nourished ancestor, is better qualified to survive the 'struggle for existence.' Not only is the birth rate decreasing in the United States, but the period of pregnancy is most probably increasing, the age of puberty growing later, as also is the age of marriage. All these factors tend to decrease the birth rate, fortunately for the race."

Smallpox in Massachusetts.—The *Boston Medical and Surgical Journal* (July 12, inst.) takes the opportunity of the recent smallpox epidemic being practically at an end to review the situation as presented by the experience of recent years. As compared with the epidemic of 1872–73, and the still greater prevalence in pre-vaccination times the recent outbreak is scarcely worthy of mention; but the collection of more careful records during the past ten years furnishes data for conclusions as to the effect of better methods of control. During the forty years ended with 1893, there were 4,720 deaths from smallpox in Massachusetts, of which 4,412—or at the rate of 170 per million annually

—occurred during the first twenty years (1854–73); and 308 – or 8 per million annually—occurred in the second twenty years (1874–93); during the decade ending with 1893 the smallpox deaths were at the rate of 2 per million annually. By carefully compiled tables of smallpox in the State from 1885 up to and including the first six months of 1894, it appears that the mortality from smallpox among the unvaccinated was 27.8 per cent. as compared with only 4.3 per cent. among the vaccinated—the former being more than six times as great as the latter.

Diet of the National Guard.—The large total of "effectives for duty" and the light sick-list speak well for the medical service of the National Guard in the various States where they have been called out for active duty. This duty will probably largely take the place of the usual summer encampment—an occasion which is generally more or less trying to the medical officer in the supervision of the hygiene and more especially of the diet of his command. Assistant Surgeon Galloupe, of the Massachusetts Light Artillery, furnishes (*The Medical Age*, June 25, inst.,) a timely article on this subject, in which he says: "An experience of six years has shown me that within forty-eight hours of their proud entry upon the field, 5 to 10 per cent. of the men are *hors du combat*, and the enemy that has accomplished this decimation is acute indigestion." Based upon this experience he offers the following suggestions: Sickness in summer camps is due principally to injudicious diet; this could be remedied in great measure by a medical inspection of food: Permanent kitchens would secure better cooking: Issuance of cooked rations by the State would render efficient inspection possible: The duty of such inspection would be a practical training for medical officers: The fixed army ration is not applicable to volunteer troops, and never desirable if better rations can be obtained: State catering would reduce the cost to companies 50 per cent.

Vaccination and Re-vaccination.—During the lull in the smallpox incidence, due to the warm weather and consequent aerial disinfection, it is worth while to add to the arguments for vaccination and re-vaccination. It is by no means certain that there will not be a recurrence of the disease during the fall and winter, and in any event the "anti" we shall always have with us. To the mass of facts and figures furnished by Dr. Quine[1] should be added these from a memorial of Dr. Goldschmidt, of Strasburg:

"Germany is the sole country where compulsory vaccination and re-vaccination have been practiced since 1875, and a glance at the following figures show the striking result of this practice as a means of effectually exterminating smallpox:

"Annual average of deaths from smallpox among 100,000 inhabitants, in Prussia, 1860–69, before the compulsory law, 33.84; between 1875–84, after vaccination and re-vaccination (compulsory) 2.23."

In Berlin, Dresden, Breslau and Bavaria, under compulsory vaccination the smallpox deaths per 100,000 (1875–84) have been 1.68, 1.48, 1.61 and 1.11 respectively; in the following cities where vaccination is voluntary, the deaths per 100,000 during the same period were: Paris, 28.95; Vienna, 84 37, and in London, where one vaccination only is compulsory, the deaths were 25.50 in the 100,000 inhabitants. As to re-vaccination, it has been shown that the proportion of successful operations increases with the age of the subject. Thus the percentage of success in those vaccinated between 6 and 7 years of age, was 32.60; 7 to 8 years, 64.00; 8 to 9 years, 72.52; 9 to 10 years, 79 63; 10 to 11 years, 85.94; 11 to 12 years, 88.64, and adults, 90.00. These facts, and others like them which are accumulating constantly, prove the absolute necessity of re-vaccination, since they show that, in 85 to 90 times in the 100, the immunity against smallpox conferred by the first vaccination has disappeared in twenty years; they also demonstrate in a most striking manner how certain as measures of public defense against the spread of smallpox are compulsory vaccination and re-vaccination. Health authorities should remit nothing of their recent energy in pushing these measures.

[1] Vaccination. The Address on State Medicine. By Wm. E. Quine, M.D. JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, June 23, 1894.

Ne Sutor Ultra Crepidam.—Arthur James Balfour, the eminent English statesman, has been advising the British public to "stick to its last"—to mind its own business and refrain from meddling and muddling in matters of science, and especially in matters of medicine. At a recent meeting of the British Economic Association he told his hearers that he thought the public had never yet mixed themselves up in scientific investigations without spoiling the investigations and doing themselves a great deal of harm. "Take medicine, for instance—if it is not flattering to call it a science; at all events those who pursue it do their best on scientific principles. Directly the public mixed themselves up in it there was a party feeling—which is essential in all public action—that had the most paradoxical, and in many cases the most disastrous results." He would, for a moment, consider the question of vaccination. He was not a doctor and had never studied the medical theory to pronounce upon the subject as an expert. Therefore he looked with a sort of remote interest at the quarrel between the doctors on the one side who had, or thought they had, settled the matter in a scientific spirit, and that section of the public who had never studied the question in a scientific spirit, but who were determined that their feelings should override science. He did not say who was right or who was wrong. Science had been before proved in the wrong and popular feeling, even uneducated popular feeling, had in many cases been proved right. But there could be no doubt that if they were going to allow questions of scientific interest to be decided by universal suffrage, they would not do much good to universal suffrage and they would absolutely ruin science. If science was wrong it could only be got right and placed in the direction of truth by being allowed free play outside altogether of influence of popular forces. The idea that any large body of the public has any opinion worth having on difficult economic or scientific subjects appeared to him to be absurd.

Cholera and Plague.—Baltic sea commerce is seriously threatened by the western extension of the cholera from Russia. The disease has invaded Finland by the northern route, and while the western movement from Poland seems to have been checked, there has been an increase of cases in Poland itself. In St. Petersburg it is reported as assuming alarming proportions; the present visitation is said to be of "a more intense and more fatal character than were the outbreaks of the two previous years." Unusual sanitary precautions are being taken to check the further spread of the disease, and it is announced that the Russian Imperial Sanitary Commission will henceforth continue in permanent session. Public prayers have been offered up in the cathedral at St. Petersburg, by the Metropolitan, that the scourge be stayed. Elsewhere in Europe the disease is disappearing or is well under control, except in Belgium where there still seems to be some spread; but the authorities are on the alert and no alarm is felt as yet. It has again broken out in Mecca and still prevails in many places in Asia Minor. As against Mecca the Sanitary Council at Tangier has taken measures to prevent returning pilgrims from landing at any of the ports of Morocco before they have been subjected to quarantine restrictions on the Island of Mogodor; and, since the death of a traveler from Sivas, in Asia Minor, after his arrival in Constantinople, all persons coming to Constanti-

nople from the Turkish coast of the Black Sea must now submit to medical examination at Sinope, and also at the entrance of the Bosporus. Recent advices, received July 14, by the Northern Pacific steamship *Victoria*, from Hong Kong, say that cholera is spreading throughout the Chinese Empire and that the Government officials are suppressing the number of deaths. In Canton alone, Chinamen say that 40,000 deaths have occurred.

A cable from Berlin, July 17, reports an outbreak of the disease in Dantzig, an important Prussian seaport near the mouth of the Vistula, and at other places in West Prussia. A death from cholera is also reported, under the same date, at Kelder, in North Holland.

As a result of the policy of suppression of information and secretion of patients in Canton and Hong Kong the plague is appearing in all the neighboring country places and its appearance at the great shipping port of Shanghai is hourly expected. It is reported that it was by a mere accident that the European authorities first learned of the disease in Hong Kong as the natives carefully concealed the spread of the contagion. One Lau Wai Chuen, a member of the Sanitary Board, proved to be hard-headed. He insisted upon having patients sent from the great native hospital of Jung Wah to the European Hygeia, and then, after examination, to the hulks in the harbor. This was done for a few days. Then the feeling among the Chinese became so bitter that the procedure had to be abandoned. Native members of the Sanitary Board stimulated hostility to European methods and the reports read like those of the anti-vaccination and anti-inspection riots in a civilized American city. When the physicians began house-to-house inspection for patients suffering from the plague there was a tremendous clamor. Placards were posted warning people not to permit the "foreign devils" to enter their homes and declaring that many who were removed were not suffering from the dread disease. These placards and rumors created such an outburst of fanaticism that the doctors were forced to give up the house-to-house inspection for two days. Before they relinquished it, however, they were actually stoned by crowds which followed them in the streets. The police detailed armed Sikhs to accompany the doctors, but this was found to promote danger of an insurrection, and it was finally decided to yield to native clamor. After two days the inspection was resumed, the native Governor having issued a proclamation warning every one from interfering with the doctors. How necessary the inspection was is shown by the fact that no fewer than five dead bodies were found in a single house, with four patients far gone with the disease. The house was reported by the Chinese to be empty, but had been employed by the Chinese to secrete patients. A disease resembling the bubonic plague is reported to have broken out in many Russian provinces and cases are said to have occurred at St. Petersburg, Moscow and elsewhere.

MISCELLANY.

The St. Louis *Clinique* has passed into the hands of Dr. Emory Lanphear, Professor of Surgery in the College of Physicians and Surgeons. Dr. Lanphear will conduct the journal in the interests of that school, and of the medical profession of the West.

Medical Registration in Massachusetts.—Adverse criticism of the new Massachusetts registration law continues to increase and it is said that there seems to be good reason to doubt whether it "will stand the test of the courts if it is ever brought there. Blunders have been discovered in its phraseology and amendments made in one branch of the Legislature were left out in the other."

No Fee-Bill in Kansas.—Lest physicians should form a trust or combination to the detriment of their patients' pockets the adoption or use of physicians' fee-bills in Kansas is void and unlawful. A physician in that State bringing suit to collect pay for services, basing his rate of charges upon any such fee-bill or agreement, loses the entire account and the legal costs in the case and, if prosecuted in turn, is liable to fine of from $100 to $1,000, or one to six months imprisonment, or both fine and imprisonment. The contention of the law is that such fee-bills prevent that free and fair competition in all trades, professions and callings which is for the best interest of society.

Spanish Smugglers Seized.—One of the most dangerous sources of the introduction of yellow fever along our South Atlantic and Gulf coasts is the smuggler. Lieut. Willey in command of the revenue cutter *McLane*, has made a report to the Treasury Department from Tampa Fla., stating that he had seized six Spanish schooners from Havana for violations of the State quarantine laws and regulations and the federal customs and navigation laws. For some years past fishing schooners from Havana have been suspected of carrying on smuggling operations along the Florida coast on a small scale and the *McLane* was sent to investigate. This vigorous action was found essential to the efficiency of quarantine along these coasts. Previous raids in former years have had the same result.

Physicians in the French Parliament.—The physicians of the French Parliament held a caucus June 21 at the Palais Bourbon, and decided to form an extra-Parliamentary committee to investigate the numerous pending questions which relate to the medical profession, the organization of relief to the poor, and the protection of the public health. The following were selected as officers of the committee: Honorary President, M. Berthelot, (senator); President, M. L. Labbe, (senator); Vice President, M. M. Cornil, (senator), and Lannelongue, (deputy); Secretary, M. M. Dellestable, (senator), and Pedebidou, (deputy); Treasurer M. Guenau (deputy).

There were present at the meeting, according to the *Journal de Médecine* of July 1, twelve Senators, and twenty-two Deputies. Among them were many well-known names.

The course of medical legislation in France should run smoothly when the profession is so ably represented in the legislative body.

The Necropsy of M. Carnot.—We publish a minute of the testimony of the autopsy of M. Carnot, President of the French Republic, assassinated at Lyon, June 24: The undersigned doctors have proceeded to-day to the autopsy of the President; they have found the following lesions: The wound was seated immediately under the depression of the right side, three centimeters below the xiphoid appendix. It measured from twenty to twenty-five millimeters, and the blade had completely divided the corresponding costal cartilage. The blade of the poniard had penetrated the left lobe of the liver about five or six millimeters. About the suspensory ligaments it had perforated the organ from left to right, and from above, downward, wounding in its passage the vena porta which was opened in two places. The length of the wound in the interior of the liver is eleven to twelve centimeters; a fatal intra-peritoneal hemorrhage was the result of this double perforation.

Drs. Lacassagne, Henri Contague, Ollier, Rebatel Poncet, Michel, Gangolphe, Fabre.—Lyon, June 25, 1894. *Journal De Médecine De Paris*, July 1, 1894.

Dr. T. S. Robertson Scores Mr. Croker's Health Officer.—(Special to the *Chicago Tribune*).—Health Officer Jenkins, upon hearing that Dr. T. S. Robertson had publicly stated that he had treated Eugene V. Debs for dipsomania, took the doctor to task for a violation of the ethics of the medical profession.

"If Dr. Robertson," said he, "has been rightly quoted he has been guilty of a gross and unpardonable breach of professional confidence in giving out to the public a statement in regard to Mr. Debs' physical ailments based on knowledge gained in the course of professional treatment."

As soon as this came to the eye of Dr. Robertson he sent this telegram to Health Officer Jenkins:

"Dr. W. T. Jenkins, Health Officer, Quarantine: Your impudence in speaking for my profession, which never rec-

ognizes you, and your ingratitude after I tried to have the Senate confirm you last winter, show that I little understood the man. The whole press will not forget how you treated them. I am willing to be criticised by any educated man, but not by a man not intelligent enough to be my valet. Now try again. T. S. ROBERTSON."

Dr. Robertson explains that his door man gave the information out thoughtlessly to a reporter and permitted the copying of the message that was sent to Debs.

Medical College Notes.

MISSOURI MEDICAL COLLEGES.—At the recent annual meeting of the Howard Medical Alumni Association, Chancellor W. S. Chaplin of the Washington University at St. Louis, indulged in some comments on St. Louis culture and on medical education in Missouri which have aroused the ire of the St. Louis daily press. Commenting upon this indignation the St. Louis *Medical Review* says:

"We have more medical schools in St. Louis than either France or Italy, and at a time when the great center of medical learning in Joplin was still flourishing, the State of Missouri had the proud distinction of closely approaching the number of medical schools in Germany. Since the enterprising doctors of that mining camp closed the door of its college in consequence of an inexplicable want of appreciation on the part of medical students, our Missouri schools have fallen to the discouraging number of seventeen."

Touching this multiplicity of medical colleges in Missouri and its effect upon medical education the *Review* does "not believe that there is one professor of medicine in this city to-day who is not convinced that there are too many medical colleges and that it would be a blessing if a speedy death would remove them with the exception of one or two —provided, of course, that his college was included in the surviving number." The *Review* thinks that after Chancellor Chaplin has lived in St. Louis "a little while longer he will probably recognize the *raison d' être* of this multitude of medical colleges. We are sorry to say that we feel in duty bound to increase his chagrin over existing conditions, and to impart to him the glad news that at no distant day the dozen of medical colleges will be full. We hear that a number of enterprising young doctors and some dissatisfied older ones, backed by knowledge and capital, are about to start a new college which for facilities of graduation will throw all the rest in the shade."

By the way, Dr. Lutz, whose communication concerning one of the St. Louis colleges appears elsewhere in this issue of the JOURNAL, is one of the editors of the *Medical Review*.

UNIVERSITY OF NASHVILLE AND VANDERBILT.—The death of Dr. W. T. Briggs and the resignation of Dr. Menees on account of illness, have led to several changes in the faculty of the Medical Departments of the University of Nashville and of Vanderbilt University. Dr. Charles S. Briggs succeeds his father in the chair of surgery; Dr. S. S. Crockett succeeds Dr. Menees in the chair of anatomy; the following named gentlemen have been transferred or appointed to the chairs specified: Dr. Ambrose Morrison, physiology; Dr. J. H. Callender, diseases of the brain and nervous system and forensic medicine; and these as demonstrators and lecturers: Dr. S. S. Briggs, anatomy; Dr. Larkin Smith, histology and microscopy; Dr. E. A. Ruddiman, chemistry and pharmacology; Dr. Owen H. Wilson, operative surgery and gynecology; Dr. J. W. Waters, physiology; Dr. John M. Bass, prosector of anatomy. Hygiene has been added to the chair of principles of medicine and pathology.

Hospital Notes.

INCORPORATED.—Mercy Hospital, Des Moines, Iowa, has become an incorporated institution.

FINLAY HOSPITAL, Dubuque, Iowa, has been thoroughly repaired and reconstructed.

DEACONESSES' HOSPITAL.—A meeting in the Second Reformed Church, Cleveland, Ohio, was held recently by the Deaconesses' Society of the Reformed Church of Cleveland. It was decided to build a new hospital, to be known as the German Hospital and Polyclinic. The building will be located near the West Side Circle, and as soon as completed the temporary hospital on Scranton Avenue will be abandoned.

STILLWATER, MINN., CITY HOSPITAL.—The annual report of the city hospital board of Stillwater, Minn., shows the receipts the past year to be $5,227.73, of which $1,783.60 was paid by the county for the care of county patients, $1,037.60 was paid by private patients, $1,363 was from the sale of tickets and the rest was made in smaller sums, by giving entertainments, dinners, etc. The disbursements figure up $5,135.75, of which the principal item was for help—$1,576.38; the other items being fuel, groceries, etc. The cash balance on hand is $90.98. The number of patients cared for during the year was 131, of which 103 were males and 28 females. There were fourteen deaths and three births.

FLOATING HOSPITAL ST. JOHN'S GUILD.—The Floating Hospital, gayly decked in flags and bunting and loaded with over one thousand women and children, was towed down the Hudson River yesterday morning on her first voyage of the season. The Floating Hospital is the property of St. John's Guild, and all last summer she made trips down the Bay to give the poor little ones of the city some sea air, a bath in salt water, two square meals and a good time generally. The boat went down the Bay to New-Dorp, S. I., left a few of the children at the hospital and then cruised around the Bay, returning to the city at 5 o'clock.—*New York Tribune.*

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 7, 1894, to July 13, 1894.

Major EGON A. KOERPER, Surgeon, granted leave of absence for one month, on surgeon's certificate of disability.

Capt. PAUL CLENDENIN, leave of absence granted for seven days, is extended twenty-three days.

Capt. JAMES D. GLENNAN, Asst. Surgeon, now on leave of absence, will report without delay to the commanding General, Department of the Missouri, for temporary duty.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending July 14, 1894.

Asst. Surgeon AMMEN FARENHOET, ordered to Naval Laboratory and Department of Instruction, New York.

CHARLES F. KINDELBERGER, appointed an Asst. Surgeon in the U. S. Navy.

LETTERS RECEIVED.

(A) Ayer, N. W. & Son, Philadelphia, Pa.

(B) Bridenstine, S. J., Port Orchard, Wash.; Battle & Co., St. Louis, Mo., 3; Bau J. Thomas, Colorado City, Col.; Bernd & Co., St. Louis, Mo.

(C) Church, W. S., London, England; Connor, Leartus, Detroit, Mich.; Cleaves, Margaret A., New York City; Conner, Milton C., Middleton, N. Y.; Church, W. F., Gibsonburg, Ohio.

(D) Davis, Thos. A., Chicago, Ill.; De Courcy, J. O., St. Lilbory, Ill.; Denison, C., Denver, Col.

(E) Eichelbucher, W. C., Terre Haute, Ind.; Eschner, A. H., Philadelphia, Pa.; Eliot, Lewellyn, Washington, D. C.; Eskridge, J. T., Denver, Col.

(F) Frazee, A. B., Kipple, Pa.; Favll, H. B., Chicago, Ill.

(G) Grindon, Joseph, St. Louis, Mo.; Griffith, W. H. & Co., New York City; Gillman, R. W., Detroit, Mich.; Griffiths, L. M., Bristol, England.

(H) Herald Dispatch Co., Decatur, Ill.; Hummel, A. L., Philadelphia, Pa., 3; Harrington, C. W., Knob View, Mo; Hofmann, J. A., San Francisco, Cal.; Hibberd, J. F., Richmond, Ind.

(I) Irwin, L. C., Washington, D. C.

(J) Jelks, J. T., Chicago, Ill.

(K) Kohler, B., St. Louis, Mo.; Kerrick, H. C., Brocton, Ill.; Karsten, A. C., Horicon, Wis.

(L) Lippincott, J. B. Company, Philadelphia, Pa.; Lanphear, Emory, St. Louis, Mo.; Loving, Starling, Columbus, Ohio; Love, I. N., San Francisco, Cal.

(M) Moore, R. C., Omaha, Neb.; Micheal, J. Edwin, Baltimore, Md.; McDougal, J. G., New Lexington, Ohio; McEnroe, J. F., Schenectady, N. Y.

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(P) Portman, A. E., White Oaks, N. M.; Porcher, F. P., Pineopolis, S. C.; Parke, Thos. E., Downingtown, Pa.; Phillips, C. W., Scipio, Ind.; Pollak, S., St. Louis, Mo.

(R) Rose, J. W., Sewanee, Tenn.; Reyburn, J. A., Elkhorn, W. Va., 2; Rea, John J., Urbana, Ill.

(S) Smith, W. S., St. Clair, Minn.; Stockwell, C. B., Port Huron, Mich.; Stuver, E., Rawlins, Wyo.; Scheiffelin, W. H. & Co., New York City; Stechert, Gustav E., New York City; Sternberg, Geo. M., Washington, D. C.; Storrs, M., Hartford, Conn.; Shaw, Edwin B., East Las Vegas, N. M.; Sundberg, John C., Bagdad, Turkey; Scott, X. C., Cleveland, Ohio.

(T) The Railway Surgeon, Chicago, Ill.; The Sanitarium, Battle Creek, Mich.; Thornton, Wm. M., Charlottesville, Va.; Taylor, L. H., Wilkesbarre, Pa.; Taylor, D. B., Norwalk, Ohio.

(V) Vetter, J. C. & Co., New York City.

(W) Würdemann, H. V., Milwaukee, Wis.; Walker Bros., Fargo, N. Dak.; Woodbridge, J. E., Youngstown, Ohio.